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SUBSONIC AERODYNAMIC CHARACTERISTICS OF THE T-2C AIRCRAFT
WITH SPANWISE BLOWING OVER THE WING FLAPS

by

Jonah Ottensofer

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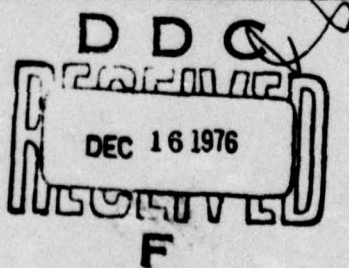
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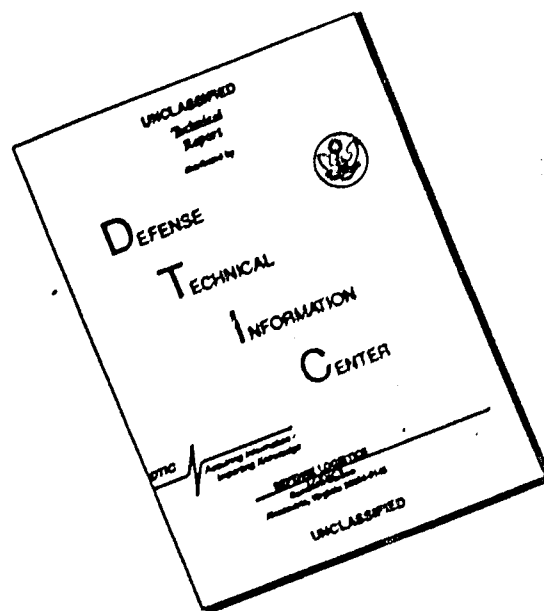
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AIRCRAFT WITH SPANWISE BLOWING OVER THE WING FLAPS

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SYMBOLS

C_D	Three dimensional drag coefficient
C_L	Three dimensional lift coefficient
C_M	Three dimensional pitching moment coefficient
C_n	Three dimensional yawing moment coefficient
C_l	Three dimensional rolling moment coefficient
C_μ	Momentum coefficient, $\dot{m} V_j / qS$
dC_M / dC_L	Slope of curve of pitching moment coefficient with respect to lift coefficient
ΔC_D	Wall correction to drag coefficient
$\Delta C_{L_{MAX}}$	Change in maximum lift coefficient due to blowing
ΔC_M	Wall correction to pitching moment coefficient
ΔC_l	Change in rolling moment coefficient
\dot{m}	Mass efflux, slugs/sec
NP	Nozzle position in percent of flap working chord
P_{NOZ}	Total pressure of jet as measured in nozzle block lb/ft ²
P_∞	Free stream static pressure lb/ft ²
Q, q	Free stream dynamic pressure lb/ft ²
R	Universal gas constant, 1715 ft ² /(sec ² °R)
S	Wing area, ft ²
T_{NOZ}	Jet total temperature, °R
V_j	Jet velocity, ft/sec
WRP	Wing reference plane
α, α_{FRL}	Angle of attack as measured from fuselage reference line, deg
$\Delta\alpha$	Wall correction to angle of attack, deg
β	Angle of sideslip, deg

γ

Ratio of specific heats

δ_a

Aileron deflection angle, deg

δ_F

Flap deflection angle, deg

δ_j

Jet exit angle as measured with respect to flap hinge line, deg

$\Delta\delta_a$

Absolute value of the difference between right and left aileron deflection, deg

ψ

Angle of yaw, deg

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SUMMARY

The wind tunnel study presented in this report was undertaken to evaluate the concept of spanwise blowing over the wing flaps as a means of increasing the lift coefficient of a T-2C aircraft. To optimize the lift coefficient, the following parameters were varied: nozzle position, nozzle angle, flap angle and blowing momentum coefficient. In addition, data were taken to evaluate the effect of spanwise blowing on aileron effectiveness, elevator effectiveness and lateral stability. Gains in lift coefficient over the entire angle of attack range below stall were noted. These gains were the greatest for the slotted flap at its largest deflection of 53° and at 43° flap deflection with the flap slot closed. No substantial effect of spanwise blowing on the stability and control of the aircraft was observed.

INTRODUCTION

The concept of blowing high pressure air out of the fuselage over the top of the wing flap in a spanwise direction, as proposed by the Lockheed-Georgia Aircraft Corporation, is an attractively simple concept for increasing the lift coefficient of an aircraft. The data presented in this report were taken to evaluate the potential of this concept as well as to evaluate the flight characteristics of an aircraft employing such a system. The model tested was a 20% scale model of a T-2C aircraft and it was chosen because of the availability of a full scale T-2C for possible flight tests as suggested by Lockheed-Georgia.

MODEL

The basic aircraft model was a 20% scale model of a T-2A aircraft modified to represent a T-2C aircraft. The main difference between the T-2A and the T-2C is that the T-2A aircraft has only one engine while the T-2C has two. To provide space for the two engines on the "C" version, the lower half of the fuselage was widened while the rest of the aircraft geometry remained essentially fixed.

To convert the T-2A model to a T-2C model, the external geometry of the lower half of the "A" fuselage was modified to represent that of the "C" version. While the "A" model had flow through ducting, the "C" model does not. Instead, the engine inlet areas were smoothly contoured into the fuselage. The basic model tested as installed in the tunnel is shown in Figure 1. Table 1 gives the basic dimensions of the model.

In order for a deflected flap to clear the lower half of the widened fuselage, an inboard section of the flap was removed. A fillet was then added between the inboard section of the flap and the fuselage. This fillet forms a continuous surface with the flap deflected at 0° . The fillet on the wind tunnel model was a scaled version of the fillet actually carried on the aircraft.

To incorporate spanwise blowing on the model, the fillet was removed and a nozzle plate, shown in Figure 2a, was attached to the inboard section of each flap. The five holes in the nozzle plate were located at 0, 12, 24, 36 and 48% of the "working chord" as defined in Figure 2b. (An initial set of data was taken with the fillet in place.) Nozzle blocks, shown in Figure 3, were screwed to the nozzle plate with the nozzles of these blocks exiting from any one of the five holes of the nozzle plate. Figure 3 shows a picture of the nozzle set-up.

There were four pairs of nozzle blocks made; each pair having a different angle (0 , 10 , 15 and 20°) between the centerline of the nozzle exit and the flap hinge line. (An additional pair of nozzle blocks was made without any exit to allow for calibration of pressure tares.) The nozzle exit diameter was 0.36 inches for all the nozzles and the nozzle centerline was one nozzle diameter above the flap surface.

In order for the jet to exit in a constant orientation with respect to the flap for each of the different nozzle blocks and positions, a 0.36 inch diameter drill bit was first inserted into the nozzle with the nozzle blocks loosely mounted on the nozzle plate. A set of shims was then placed on the flap surface under the drill bit and the nozzle block, with the drill bit in it, was rotated until the bit became parallel to and just contacted the shims. At this point the nozzle block was securely fastened to the

nozzle plate. By using this procedure, the centerline of the nozzle, and thus the jet exiting from the nozzle, was parallel to the local flap surface. The nozzle block had a total pressure probe, shown in Figure 3, just upstream of the nozzle exit.

Connected upstream of the nozzle block was a combination of rigid and flexible tubing (visible in Figure 3) which led to a plenum located in the aft lower section of the fuselage. The plenum was a steel cylinder measuring $2 \frac{3}{4}$ inches inside diameter and 7.8 inches long, capped at both ends. The downstream end of the cylinder had a thermocouple and a pressure transducer (Figure 3) to measure the temperature and pressure in the plenum. The other end of the cylinder was connected to the large diameter flexible tubing (Figure 3) which brought the air up through the balance frame.

Flap angles tested were 0° (with no blowing), 33° , 43° and 53° , as defined in Figure 2b. For the configuration with the flaps deflected the gap and overhang, defined in Figure 2b, were each set at approximately 2% of the local wing chord.

All runs with the model in the tunnel were run with the vertical tail on. Lift coefficient optimization runs were made with horizontal tail off while stability runs were made with horizontal tail on. In addition, configurations with flap deflection were run with the flap slot open except where it is indicated that the flap slot was sealed. With the flap slot sealed, the flap was at the same relative position to the wing as with the flap slot open. The purpose of sealing the flap was to see if a sealed flap gap would provide a better working environment for spanwise blowing. If this were the case a comparable flap sealing modification would be made on the flight test article.

TEST AND MEASUREMENTS

This investigation was conducted in the Naval Ship Research and Development Center's 8 x 10 foot North Subsonic closed throat atmospheric wind tunnel. The majority of the runs were at a dynamic pressure of 30 psf which corresponded to a Reynolds number of 1.48×10^6 , based on a mean aerodynamic chord of 1.48 feet. Additional runs were made at dynamic

pressures of 20 and 40 psf corresponding to Reynolds numbers of 1.18 and 1.73×10^6 , respectively. No effect of Reynolds number on the data was observed.

The model was mounted on a main strut and a pitch strut as shown in Figure 1. Six component data were measured by the external Toledo mechanical balance system. The mechanical measurements were then converted to electrical signals which were processed by a Beckman 210 High-Speed Data System, digitized and recorded on magnetic tape.

In addition to recording the six component data, the pressures upstream of and at the throat of a venturi meter as well as the air temperature were recorded to calculate mass flow. Further, the total temperature and pressure in the plenum as well as the total pressure in the nozzle block were recorded. The latter pressure and the plenum temperatures were used to calculate the jet momentum coefficient (C_μ).

The jet momentum coefficient (C_μ) was determined from the following equation:

$$C_\mu = \dot{m} V_j / QS$$

The mass flow rate (\dot{m}) was measured by a calibrated venturi meter in the main supply line. The jet velocity (V_j) was calculated assuming isentropic expansion from nozzle block total pressure to free stream static pressure as follows:

$$V_j = \left\{ 2 R T_{NOZ} \left(\frac{\gamma}{\gamma - 1} \right) \left[1 - \left(\frac{P_\infty}{P_{NOZ}} \right)^{\frac{\gamma - 1}{\gamma}} \right] \right\}^{1/2}$$

A full set of test data is presented in Appendix A.

TARES AND CORRECTIONS

The data were corrected for solid blockage. In addition the following wall corrections were applied

$$\Delta\alpha = .965 C_L$$

$$\Delta C_D = .0167 (C_L)^2$$

$$\Delta C_M = .0182 C_L \text{ (only with horizontal tail on)}$$

For all configurations wind-off weight tares were recorded and subtracted from the wind-on data in the data reduction routine. Additional tares were required to correct for the loads on the balance system when the air supply system was pressurized. The closed nozzle blocks mentioned earlier were connected, the system was pressurized to the various pressure values at which flow data would subsequently be run, and wind-off data were recorded. These pressure data were then subtracted from the corresponding components of wind-on data at the respective pressures by the data reduction routine.

The design of the model air supply system made it impossible to perform the conventional model-erect, model-inverted, image-struts-in, image-struts-out test sequence for determination of flow angularity effects and aerodynamic tares due to struts. Aerodynamic data were obtained on the struts installed on the test section in the absence of the model. As shown in Figure 4a application of these data as tares brought the results in closer agreement with T-2A data of Reference 1 for the zero-flap-deflection tail-off case. However, with the flaps at 43° the agreement was not improved (Figures 4b and 4c). Therefore it was decided to apply no strut tare corrections. Consequently, these results should not be directly translated into predicted aircraft characteristics, especially with respect to drag and stability characteristics. It is felt, however, that the presence of the uncorrected tares does not interfere materially with the primary purpose of examining the effects of the spanwise blowing system.

RESULTS AND DISCUSSIONS

LONGITUDINAL CHARACTERISTICS

Lift

A comparison of the lift variation with angle of attack for the basic flap deflections with no blowing is shown in Figure 5. As expected, with

increasing flap angle, the slopes of the C_L vs α curves remain constant as the curves themselves are shifted upwards. However, for the flap deflected to 43° and the slot sealed there is a decrease in the C_L vs α slope. This is probably due to the improved flow attachment of the slotted flap compared with the sealed flap. The characteristically sharp stall of this aircraft occurs at about the same angle of attack for all flap angles. It should also be noted that the removal of the fillet and replacement with the nozzle plate decreases the overall lift coefficient by about 0.025 while somewhat increasing $C_{L_{max}}$.

An evaluation of the effect of nozzle position and jet exit angle on C_L is presented in Figure 6. For a given jet exit angle of 15° Figure 6a shows that for the nozzle positions available, the nozzle should optimally be placed at the 48% chord position with the flap slot open, while with the flap slot closed the nozzle should be moved forward to the 36% chord position. With the nozzle located at the 48% chord position and the slot open, the overall best gain in C_L (but not $C_{L_{MAX}}$) is for a jet exit angle of 15° as shown in Figure 6b. However, as the nozzle is moved forward to the 36% chord position the jet exit angle should be increased to 20° .

These results are consistent with the hypothesis that the spanwise jet serves to energize the flap boundary layer and entrain flow coming over the flap. Thus, the high energy air incoming through the flap slot would need "assistance" from the spanwise jet further along the flap chord relative to the flap with the slot closed. In addition, if the jet exit position is moved forward the jet exit angle should be increased so that the jet can better focus on the rear portion of the flap where the flow is more likely to separate. Based on a preliminary evaluation of the test results, it was decided to evaluate the basic concept with the slot open, the nozzle at the 48% chord position and a jet exit angle of 15° . Some further evaluation of the spanwise concept with the slot closed was also performed but unfortunately not at the optimum nozzle position or angle.

The effects of C_{μ} on lift coefficient for various flap deflections, with and without the horizontal tail and with the flap slot open and closed are presented in Figure 7 and summarized in Figures 8 and 9. From Figure 7 it is seen that the stall angle or characteristic steepness is not significantly changed with blowing. It is also observed from Figures 7 and 8 that there is an initially large gain in $C_{L_{max}}$ with C_{μ} up to a C_{μ} of about 0.015 but beyond this value of C_{μ} the gain in $C_{L_{max}}$ with C_{μ} is not as pronounced. This same initial gain is visible in Figure 9 where C_L is plotted as a function of C_{μ} at two angles of attack below stall.

Further analysis of Figures 8 and 9 indicate that the configurations that gain most in C_L with increasing C_{μ} of spanwise blowing are the higher flap angles (most notably 53°) and the flap with the slot closed. The reason for these gains is that the spanwise blowing energizes the flow so that the flow remains attached and the flaps can then perform almost ideally. While spanwise blowing also energizes the flow for lower flap angles, the gains in C_L are not as great because the difference due to flow separation between the unblown and ideal performance of these lower flap angles is not as large.

During the test program it was learnt that the actual T-2 flies with ailerons uprigged 3° in their neutral position. A series of runs were made with the ailerons uprigged 3° and the data are shown in Figure 10. The effect of the 3° aileron deflection appears to be a decrease in C_L of about 0.04 throughout the angle of attack range, with and without blowing. Corrections to data can therefore readily be made. All other data was taken with ailerons at 0° except where specific aileron deflections are noted.

Drag

Drag polars for the basic aircraft without blowing for various flap deflections are presented in Figure 11. As the flap angle increases so does the drag for fixed values of C_L . Closing the flap slot does not appear to increase drag whereas replacing the fillet with the nozzle plate does increase drag.

The effect on drag by increasing C_{μ} is presented in Figure 12. At lift coefficients below stall, as C_{μ} increases there is only a slight increase in drag for the slotted flap configuration as shown in Figures 12a and 12b. At or beyond stall a much more severe drag penalty is imposed by spanwise blowing. For the configuration with the slot flap closed, however, a substantially higher drag penalty is experienced at all lift coefficients with increase in C_{μ} as shown in Figure 12c.

Longitudinal Stability

No substantial effects on longitudinal stability were noticed with the implementation of spanwise blowing in the T-2. Figure 13 presents a summary of pitching moment slope (dC_M/dC_L) before stall as a function of blowing coefficient which indicates almost no effect on dC_M/dC_L with increasing blowing coefficient for the flap at 43° with open slot with and without the horizontal tail. With the flap at 43° and flap slot closed with the horizontal tail off there appears to be a slight increase in stability with increasing blowing coefficient.

The elevator characteristics for the T-2 aircraft with and without blowing are presented in Figure 14 while Figure 15 is a summary plot showing elevator deflections required for trimming with and without blowing. From these two figures one can conclude that spanwise blowing has no large scale effects on the trim characteristics of the aircraft. In fact from Figure 15 it appears that there is even a slight reduction in elevator deflection required for trimming with blowing compared to without blowing.

AILERON CHARACTERISTICS

The aileron characteristics with and without blowing are presented in Figure 16 and summarized in Figure 17. Figure 17 presents the change in rolling moment coefficient as a function of the difference in deflection between the right and left aileron for configurations with and without blowing. No effect of spanwise blowing on aileron effectiveness is noted. North American (Reference 1) has pointed out that the severe rolling moments

encountered at stall are due to asymmetric characteristics peculiar to the model. This may also explain the erratic behavior of the rolling and yawing moments for $C_{\mu} = .017$ shown in Figure 16b.

LATERAL STABILITY

The model was tested at three angles of yaw (0, -6, -12°) to determine the effect of spanwise blowing on lateral stability. Figure 18 contains a plot of yawing and rolling moment as a function of angle of yaw at a fixed angle of attack with and without blowing. It appears from this figure that the slopes of the C_n vs β and C_l versus β curves remain relatively constant with and without blowing and therefore it may be concluded that spanwise blowing has no substantially detrimental effect on lateral stability.

CONCLUSIONS

A subsonic wind tunnel investigation was conducted on a 20% scale model of a T-2C aircraft to determine the potential gains realizable from the implementation of spanwise blowing over the flaps of such an aircraft. In addition, the effect of spanwise blowing on the flying qualities of such an aircraft was to be determined. The investigation yielded the following conclusions:

- Increments of $C_{L_{max}}$ on the order of 0.1 to 0.12 at blowing coefficients (C_{μ}) of about 0.035 were realizable for the slotted flap at 43° deflection. Gains of this magnitude were realizable over the entire angle of attack range before stall.
- For the slotted flap at 53° or the flap deflected at 43° with slot closed, gains in $C_{L_{max}}$ 0.16 to 0.18 were realized at C_{μ} 's of about 0.035. Gains of this order were also realized for the entire angle of attack range before stall.
- No substantial effect on the stability and control of the aircraft due to the implementation of spanwise blowing was noted.

ACKNOWLEDGEMENT

The author wishes to express his appreciation to the Subsonic Wind Tunnel Crew of NSRDC's Aviation and Surface Effects Department for their valuable assistance during this investigation. Appreciation is also due to Mr. Charles Dixon of the Lockheed-Georgia Company for his guidance and assistance during the investigation.

REFERENCES

1. Cohen, M. H. and J. K. Kagawa, "Low Speed Wind Tunnel Tests of a 0.20-Scale Model of the T2J-1 Airplane to Determine General Aerodynamic Characteristics and Duct Pressure Recovery Data," North American Aviation Inc. Rpt. NA-56-1296 NAAL-358, Vol. 2, 159 p. incl. Illus (Sep 1957).

TABLE 1

GEOMETRIC CHARACTERISTICS OF THE T-2 AIRCRAFT
Full Scale Dimensions (Model Factor = 0.20)

Wing

Area, ft ²	255.0
Span, ft. (including tip tanks)	37.75
Aspect ratio	5.0
Taper ratio	0.50
Chords: root (Wing Sta. 0.000), in.	114.198
tip, in.	57.087
M.A.C. (Wing Sta. 95.255), in.	88.86
Fus. Sta. of .25c, in.	216.7
Wing Plane of .25c, in.	6.12
Airfoil section: root and tip	NACA 64A212 modified
Dihedral, deg.	+3.00
Incidence of root chord, deg.	+2.00
Aerodynamic twist, deg.	-3.00
Element about which wing is twisted, % c	25
Sweepback angle of 25% elem., deg.	2.28

Flap (Fillet not included)

Type	Single Slotted
Area (total), ft ²	50.0
Span (one side), in.	102.5
Root chord, in.	39.5
Tip chord, in.	29.5

Horizontal Tail

Area, ft ²	58.0
Span, ft.	16.43
Aspect ratio	4.5
Taper ratio	0.5
Chords: root (H.T. Sta. 0.00), in.	58.4
tip	29.52

TABLE 1 (Continued)

M.A.C. (H.T. Sta. 43.80), inc.	45.40
Fus. Sta. of $.25\bar{c}_h$, in.	422.35
Wing Plane of $.25\bar{c}_h$, in.	57.20
Airfoil section: root and tip	NACA 65A012
Maximum Overall Fuselage Length, ft	38.7

TABLE 2 - RUN SCHEDULE

RUN NO.	HORIZONTAL TAIL (Elev. Ang)	FLAP ANGLE (Deg.)	AILERON ANGLE (Deg.)	NOZZLE POSITION (% Flap Chord)	NOZZLE ANGLE (Deg.)	C_{μ} (Approx.)	DYNAMIC PRESSURE (Approx.)	β (Deg.)	Remarks
2	(MODEL OUT OF TUNNEL ONLY MAIN AND TAIL STRUT IN)					0	30	0	
71	(MODEL OUT OF TUNNEL ONLY MAIN AND TAIL STRUT IN)							+20 -20	
4	OFF	43	0	--	--			0	WING FILLET ON NOZZLE PLATE OFF
6		43		--	--				
8		0		--	--				
9		33		--	--				
10		53		--	--				
12		43		--	--				
19				48	0	0			WING FILLET OFF NOZZLE PLATE ON
20				48	0	.027			FROM RUN 12
21				48	15	.026			THRU RUN 107
22				24	15	.026			
23				24	0	.027			
24				36	15	.026			
25				36	15	0			SLOT TAPED
26				36	15	.026			TOP AND BOTTOM
27				24	15	.025			
28				24	0	.026			
29				24	15	.026			
30				12	15	.027			
31				12	15	.028			SLOT TAPED BOTTOM

TABLE 2 - CONTINUED

RUN NO.	HORIZONTAL TAIL (Elev. Ang)	FLAP ANGLE (Deg.)	AILERON ANGLE (Deg.)	NOZZLE POSITION (% Flap Chord)	NOZZLE ANGLE (Deg.)	C_{μ} (Approx.)	DYNAMIC PRESSURE (Approx.)	β (Deg.)	Remarks
32	OFF	43	0	24	15	.006	30	0	SLOT TAPED TOP & BOT.
33						.017			
34						.035			
35						.060	20		
36				48		0	20		
37						.025	30		
38					0	.026			BACK TO OPEN SLOT
39					15	.006			
40						.017			
41						.025			
42						.035			
43						0	20		
44						.060	20		
45						0	40		
46						.020	40		
47						.026	30		
48					20	.025			
49					10	.026			
50				36	10	.027			
51				36	0	.027			
52				36	20	.026			
53		43		48	15	.041			

TABLE 2 - CONTINUED

RUN NO.	HORIZONTAL TAIL (Elev. Ang)	FLAP ANGLE (Deg.)	AILERON ANGLE (Deg.)	NOZZLE POSITION (% Flap Chord)	NOZZLE ANGLE (Deg.)	C_L (Approx.)	DYNAMIC PRESSURE (Approx.)	β (Deg.)	Remarks
54	OFF	43	0	48	15	.041	30	0	
55		33				0			
56		33				.017			
57		33				.027			
58		33				.041			
59		53		36		0			
60		53				.018			
61		53				.027			
62		53				.042			
67	ON(0°)	43		48		0			
68						.017			
69						.027			
72						.043			
73	ON(-10°)					0			
74						.017			
75						.026			
76						.039			
77	ON(-5°)					0			
78						.019			
79						.031			
80						.049			
81	ON(+5°)					0			

For runs 78, 79, 80
"Q" too low; hence
coefficients too high.

TABLE 2 - CONCLUDED

RUN NO.	HORIZONTAL TAIL (Elev. Ang)	FLAP ANGLE (Deg.)	AILERON ANGLE (Deg.)	NOZZLE POSITION (% Flap Chord)	NOZZLE ANGLE (Deg.)	C_L (Approx.)	DYNAMIC PRESSURE (Approx.)	β (Deg.)	Remarks
82	ON(+5°)	43	0	48	15	.017	30	0	
83						.026			
84						.041			
85			L=-3, R=-3			0			
86			L=-3, R=-3			.026			
87	ON(0°)		L=0, R=-6			0			
88						.017			
89						.026			
90						.041			
91			L=+5, R=-11			0			
92						.017			
93						.026			
94						.040			
97			0			.026		6	
98			0			.026		12	
99			0			0		6	
100			0			0		12	
102	OFF	33	0				30	0	
103		33	0				40		
104		33	L=-3, R=-3				40		
105		33	L=-3, R=-3				30		
106		43	0	24			30		FLOW SEPARATION STEP
107		43	0	24		.025	30		ON FLAP

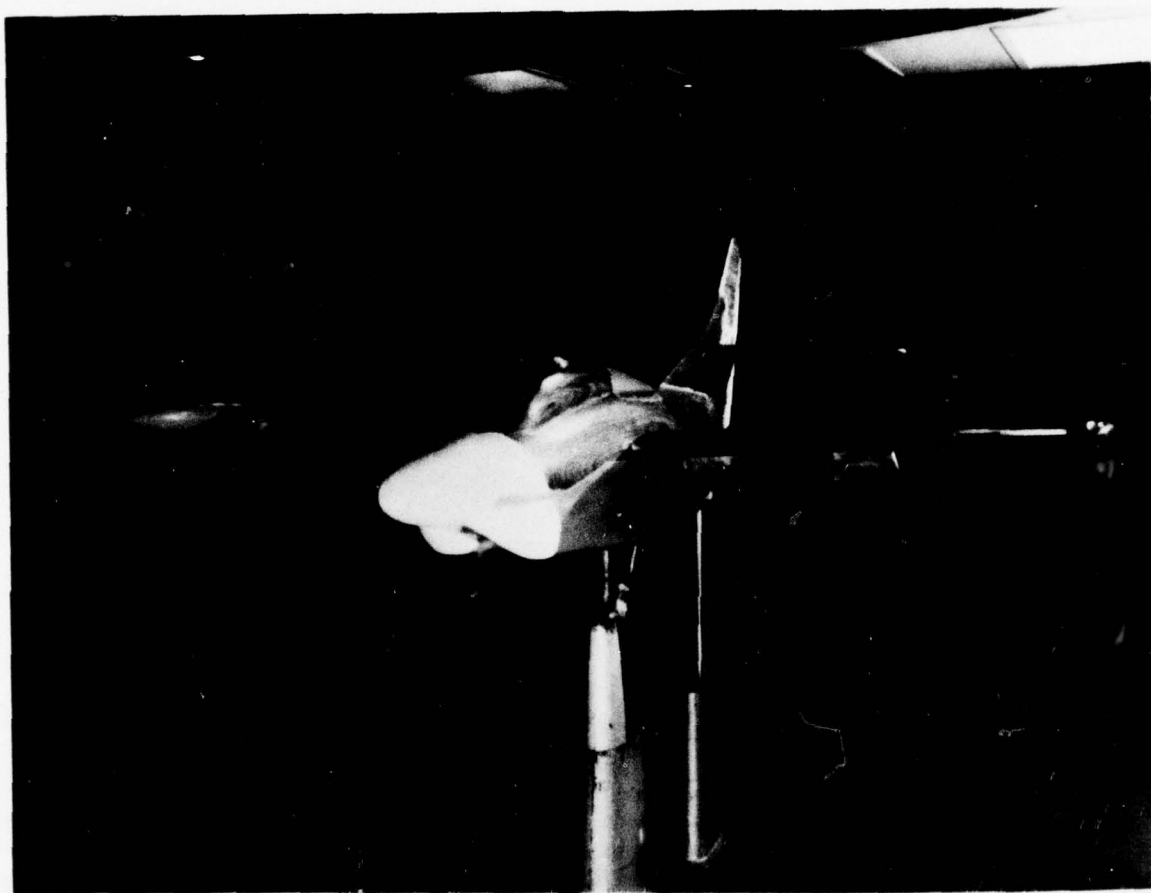
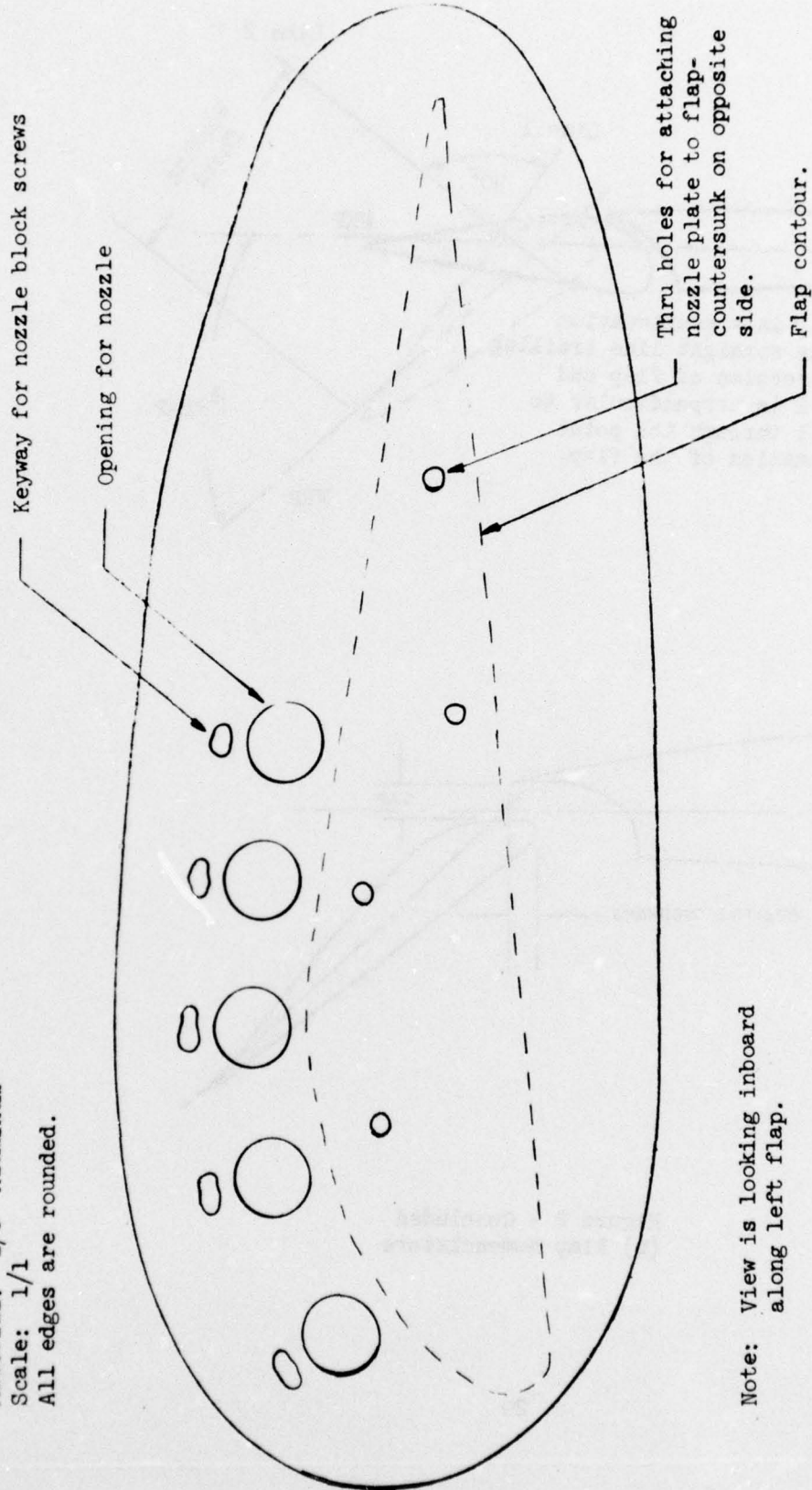


Figure 1 - View of Model Installed in Tunnel

Material: 1/8" Aluminum
 Scale: 1/1
 All edges are rounded.



Note: View is looking inboard
 along left flap.

Figure 2 - Nozzle Plate and Flap Nomenclature
 (a) Schematic of Nozzle Plate

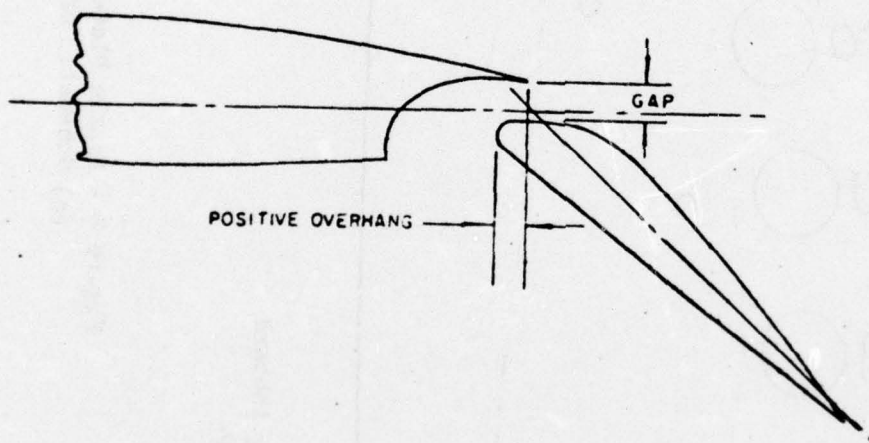
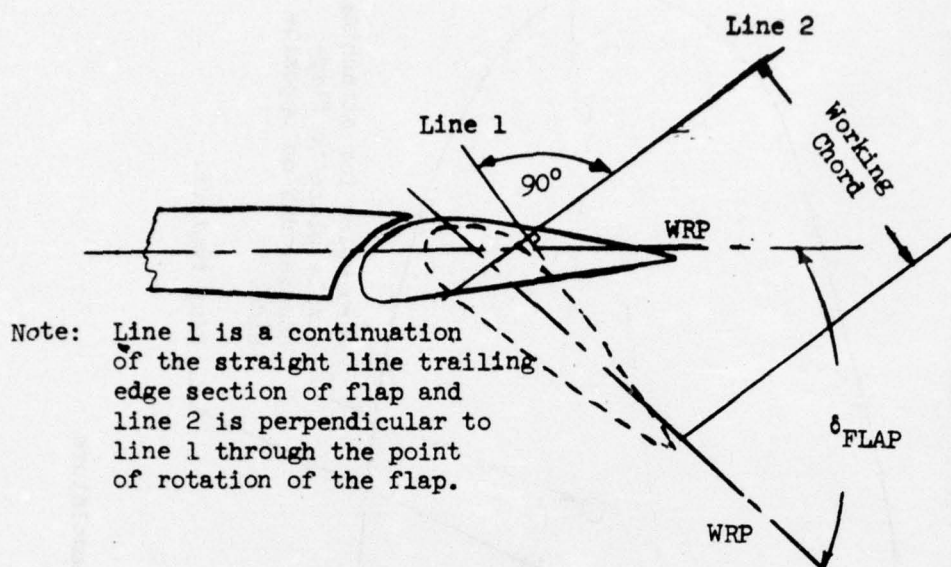


Figure 2 - Concluded
(b) Flap Nomenclature

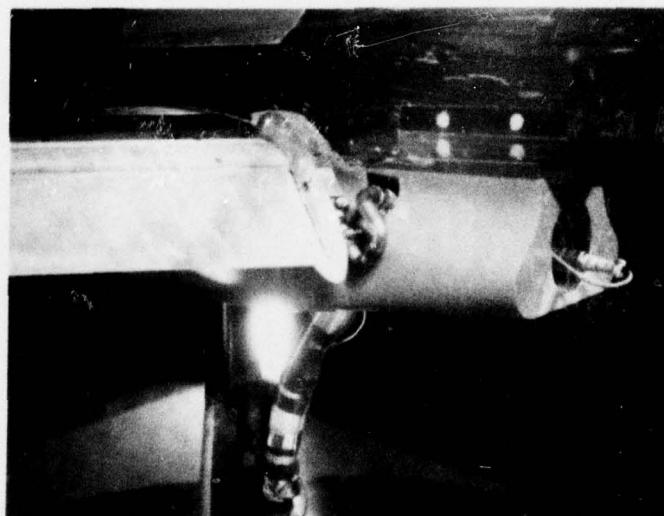
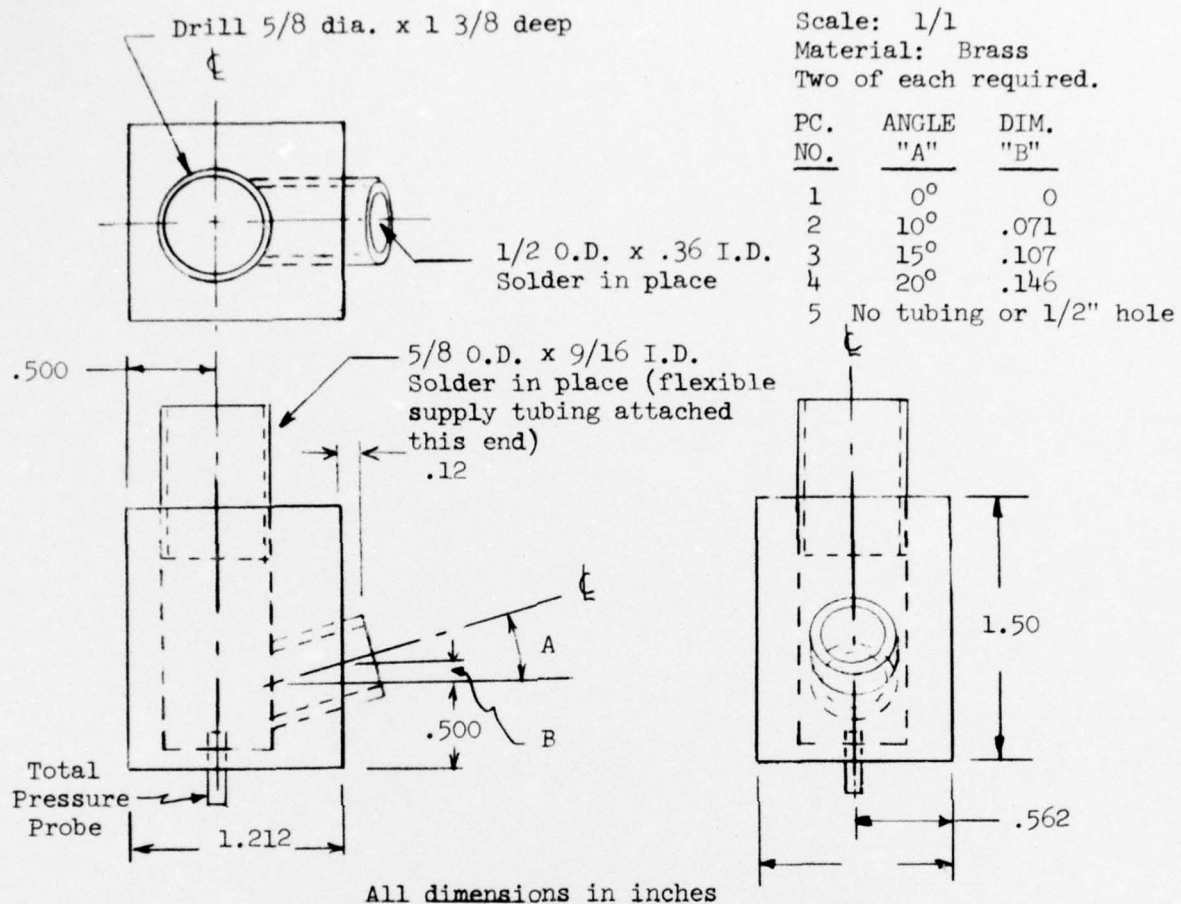


Figure 3 - Schematic and Installed View of Nozzle Blocks

$\delta_F = 0^\circ \quad C_u = 0 \text{ Tail Off}$

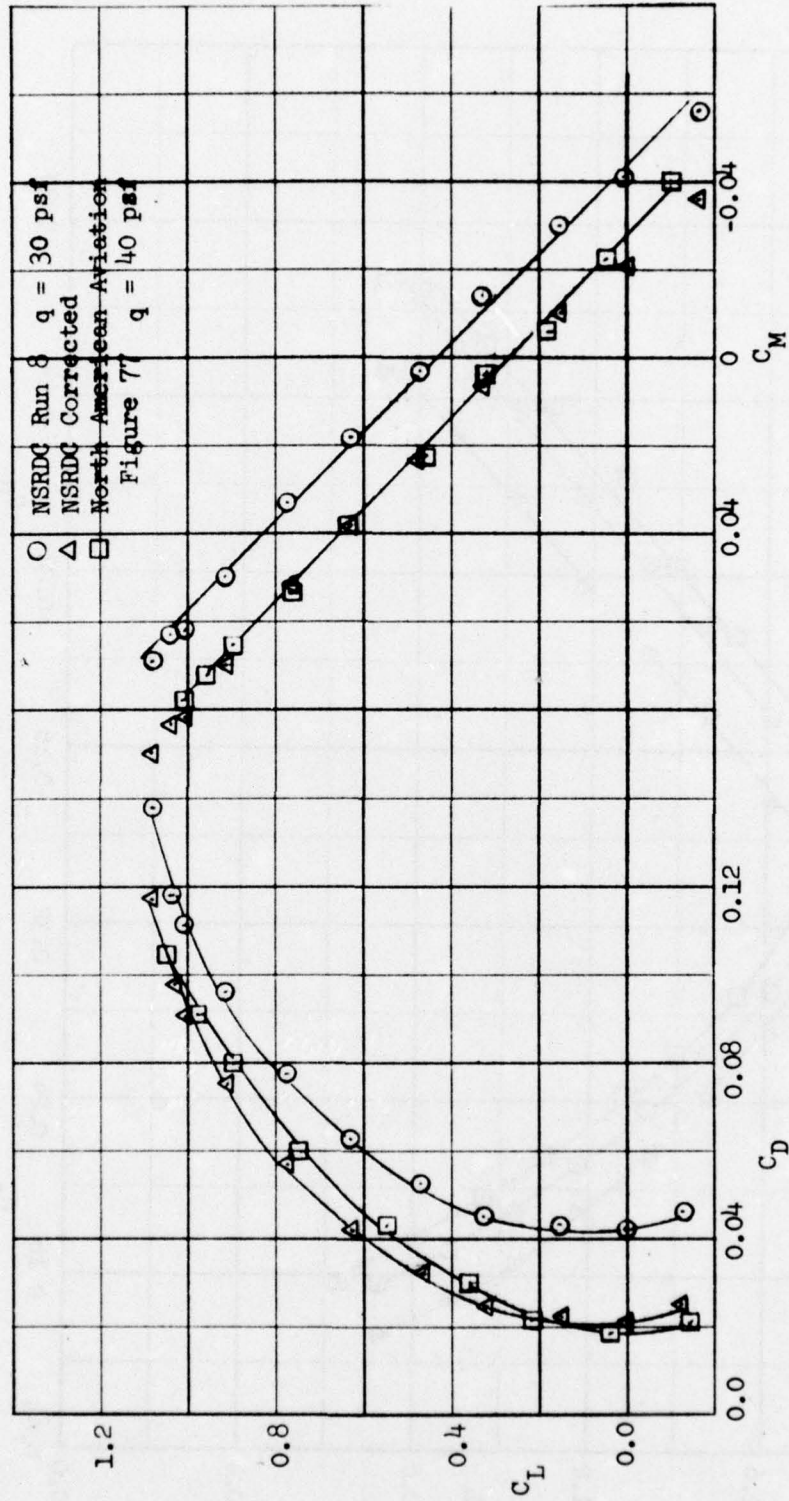


Figure 4 - Comparison of NSRDC Data with North American Aviation Data
(a) Tail Off - No Flap Deflection

$\delta_F = 43^\circ$ $C_u = 0$ Tail Off

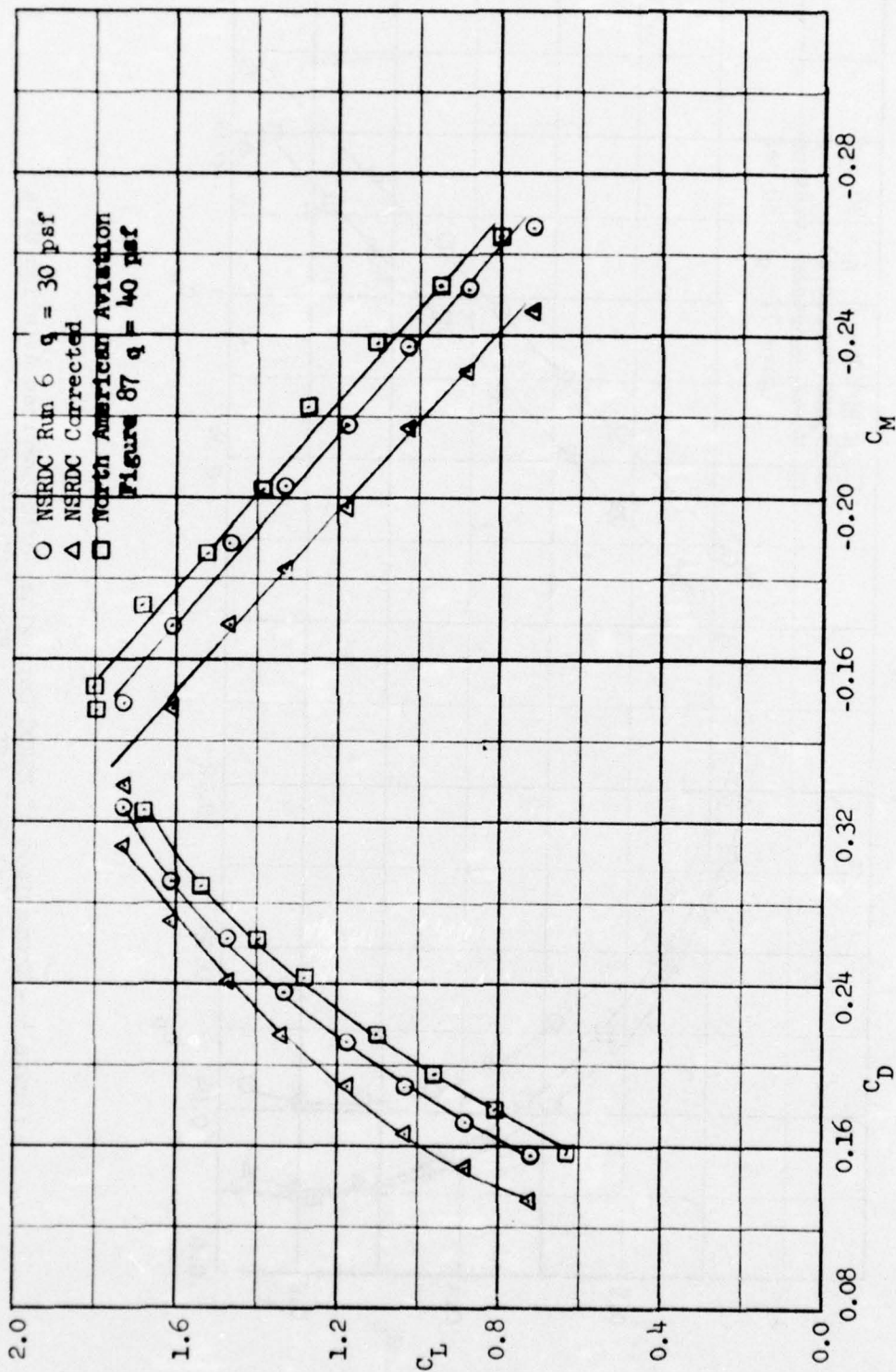


Figure 4 - Continued
(b) Tail Off - Flap Deflected 43°

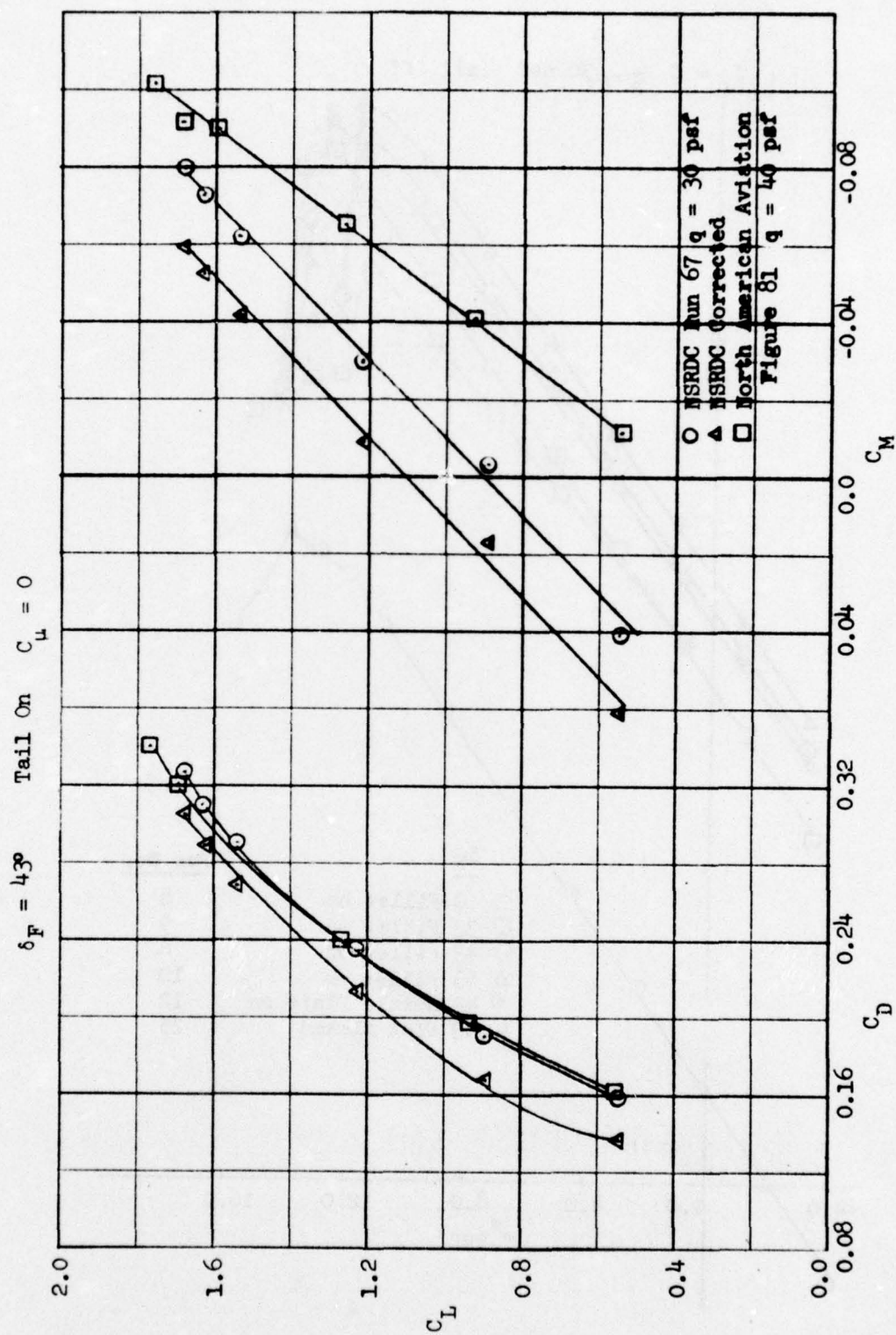


Figure 4 - Concluded
(c) Tail On - Flap Deflected 43°

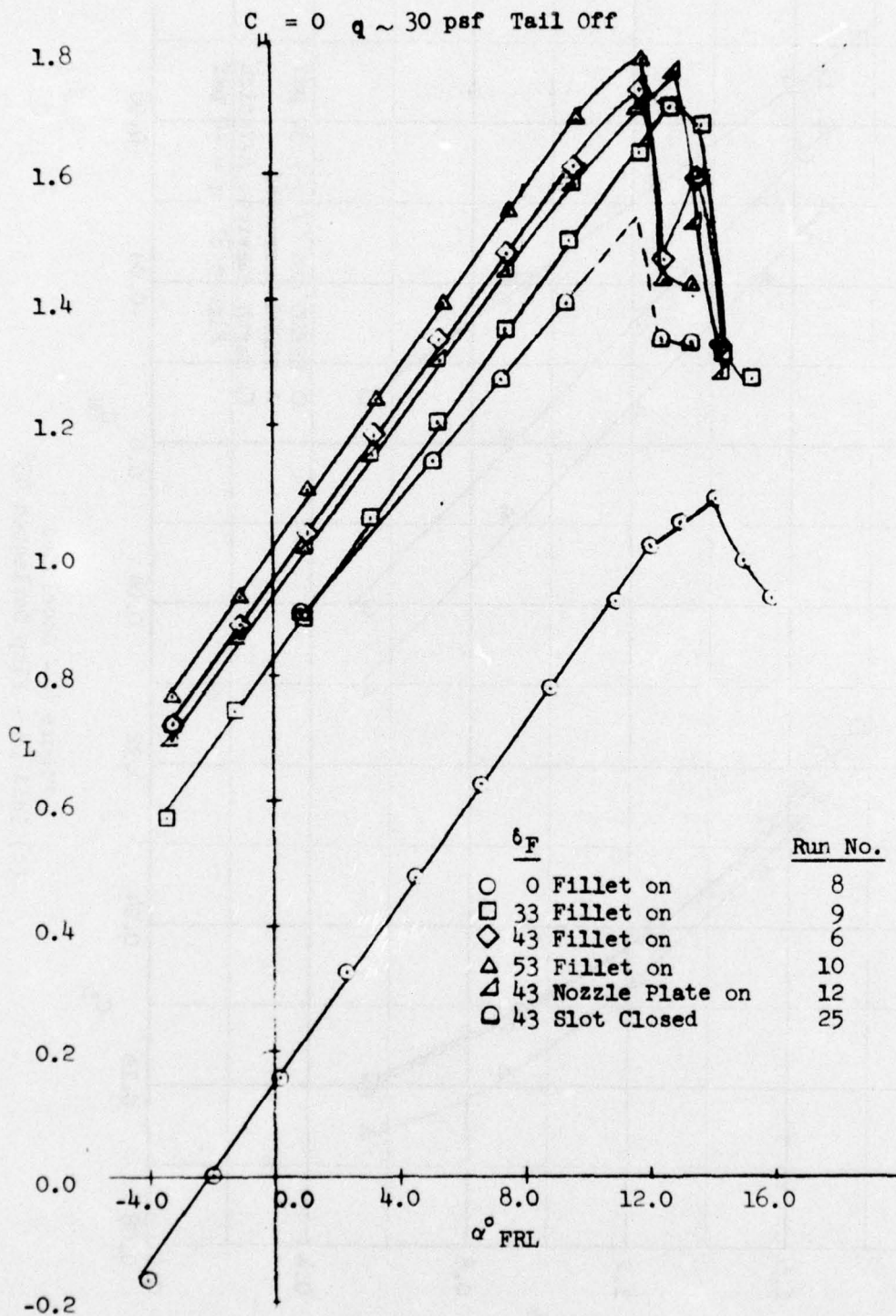


Figure 5 - Lift Coefficient Variation with Angle of Attack for Various Flap Deflections

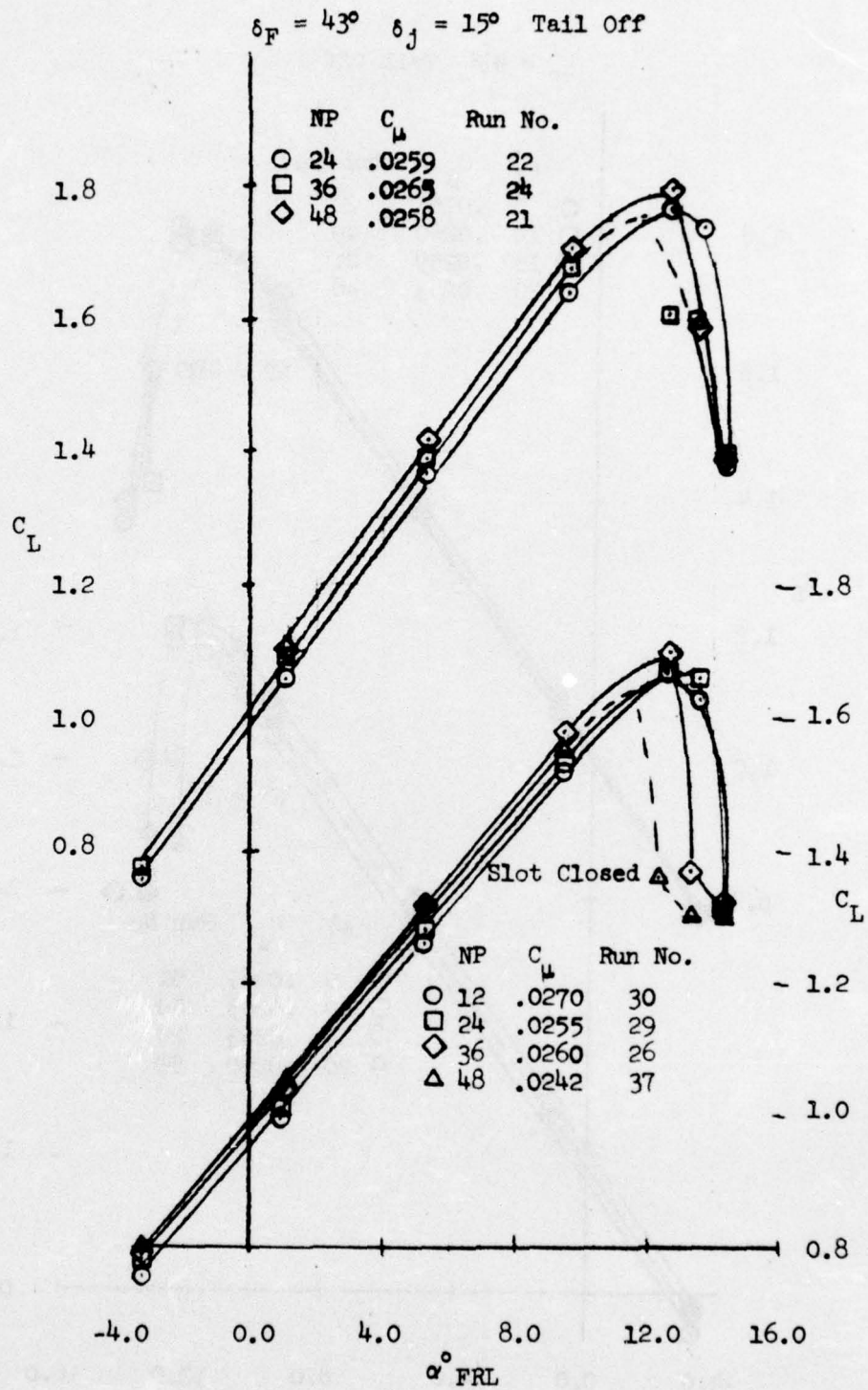


Figure 6 - Optimization of Nozzle Position and Jet Exit Angle
(a) Nozzle Position Variation

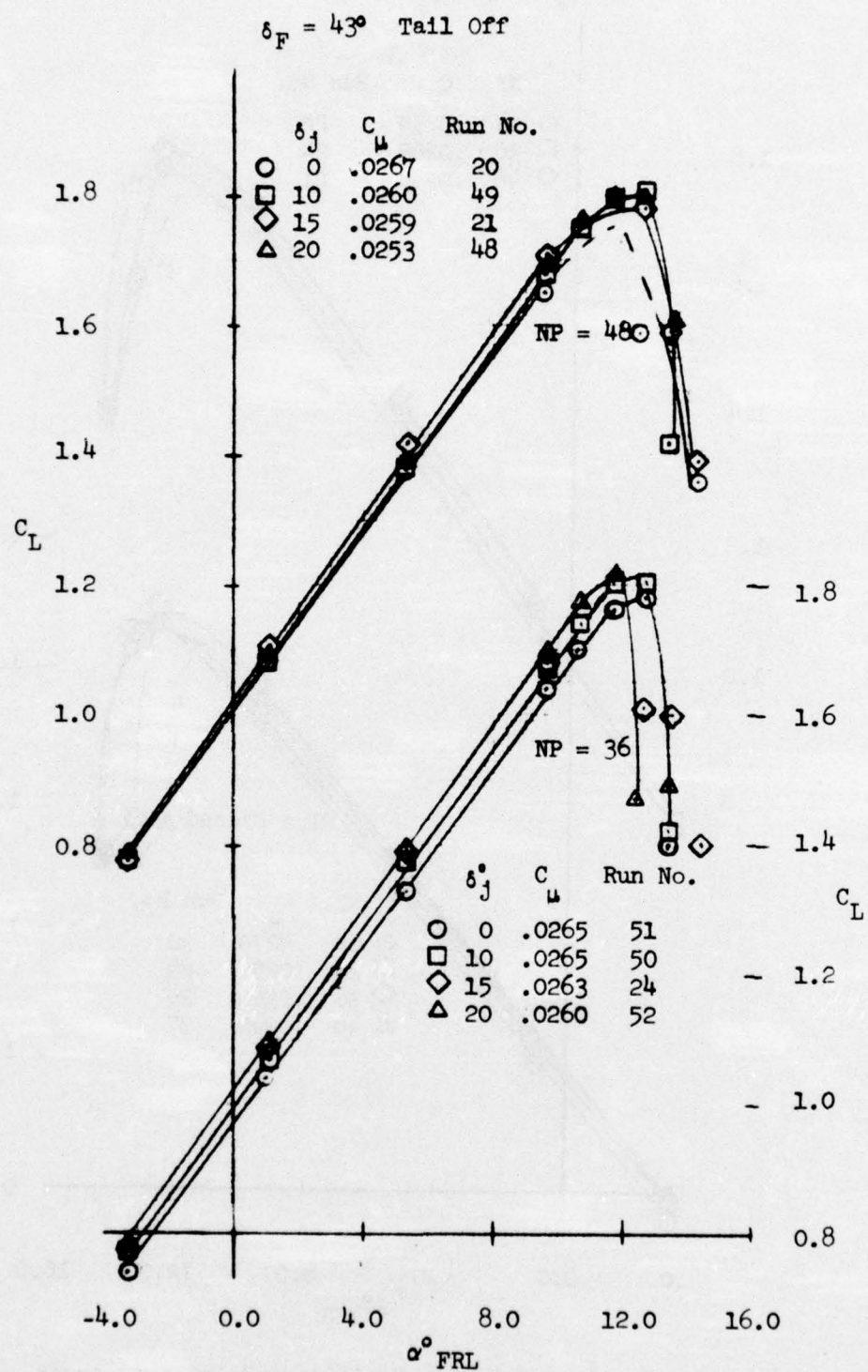


Figure 6 - Concluded
(b) Nozzle Angle Variation

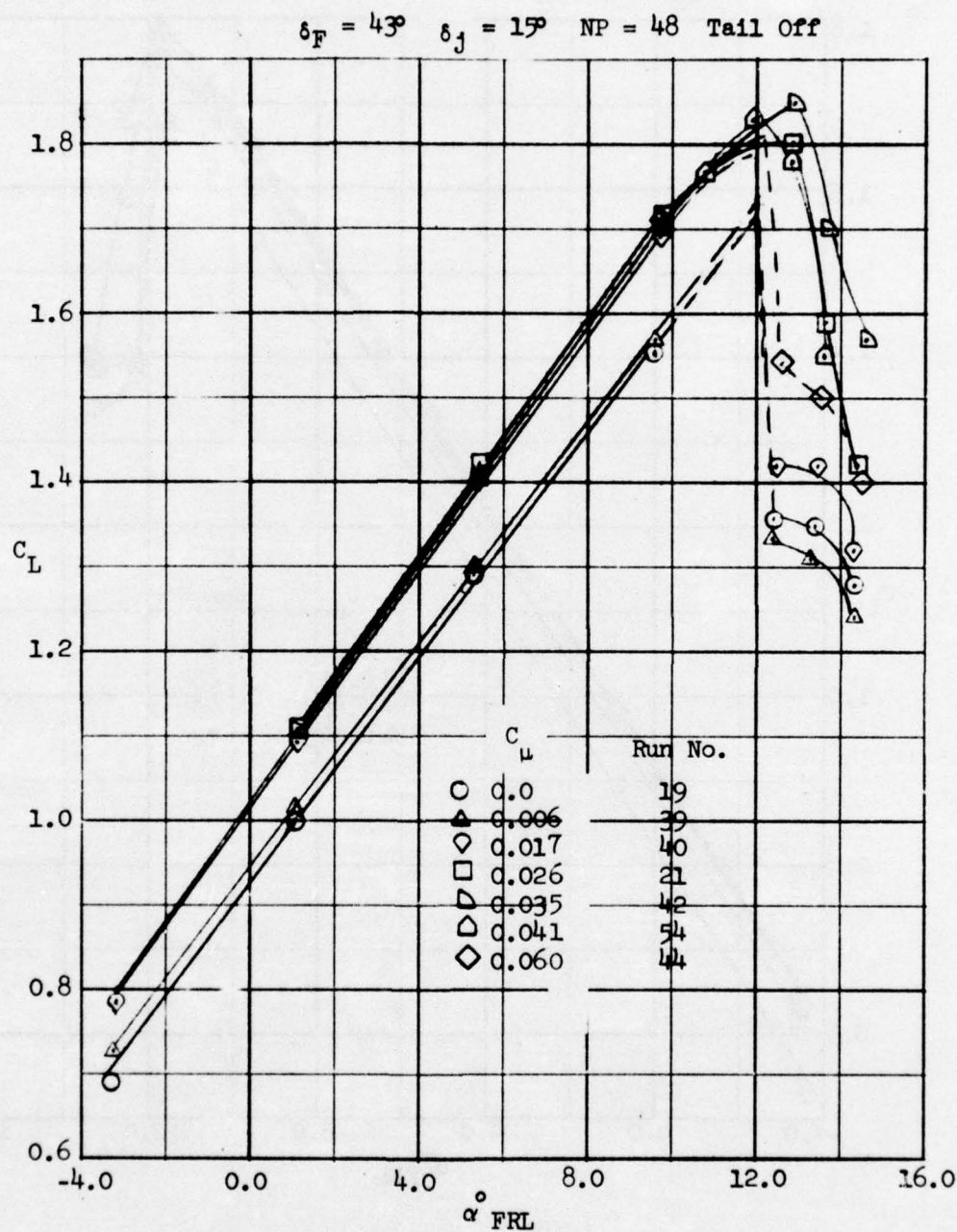


Figure 7 - Effect of C_μ on C_L Versus Alpha Curves
 (a) Flap at 43° with Slot Open and Tail Off

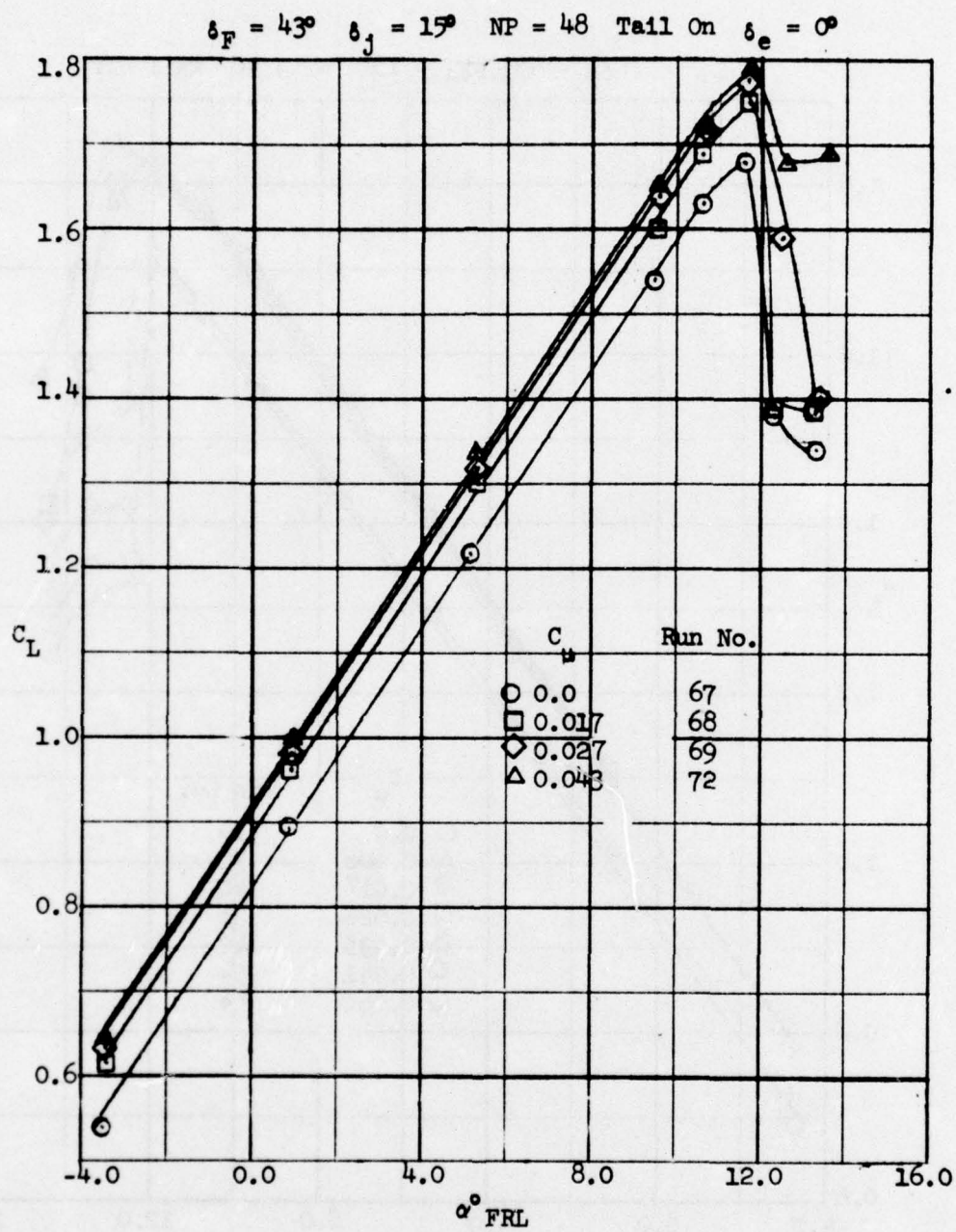


Figure 7 - Continued
(b) Flap at 43° with Slot Open and Tail On

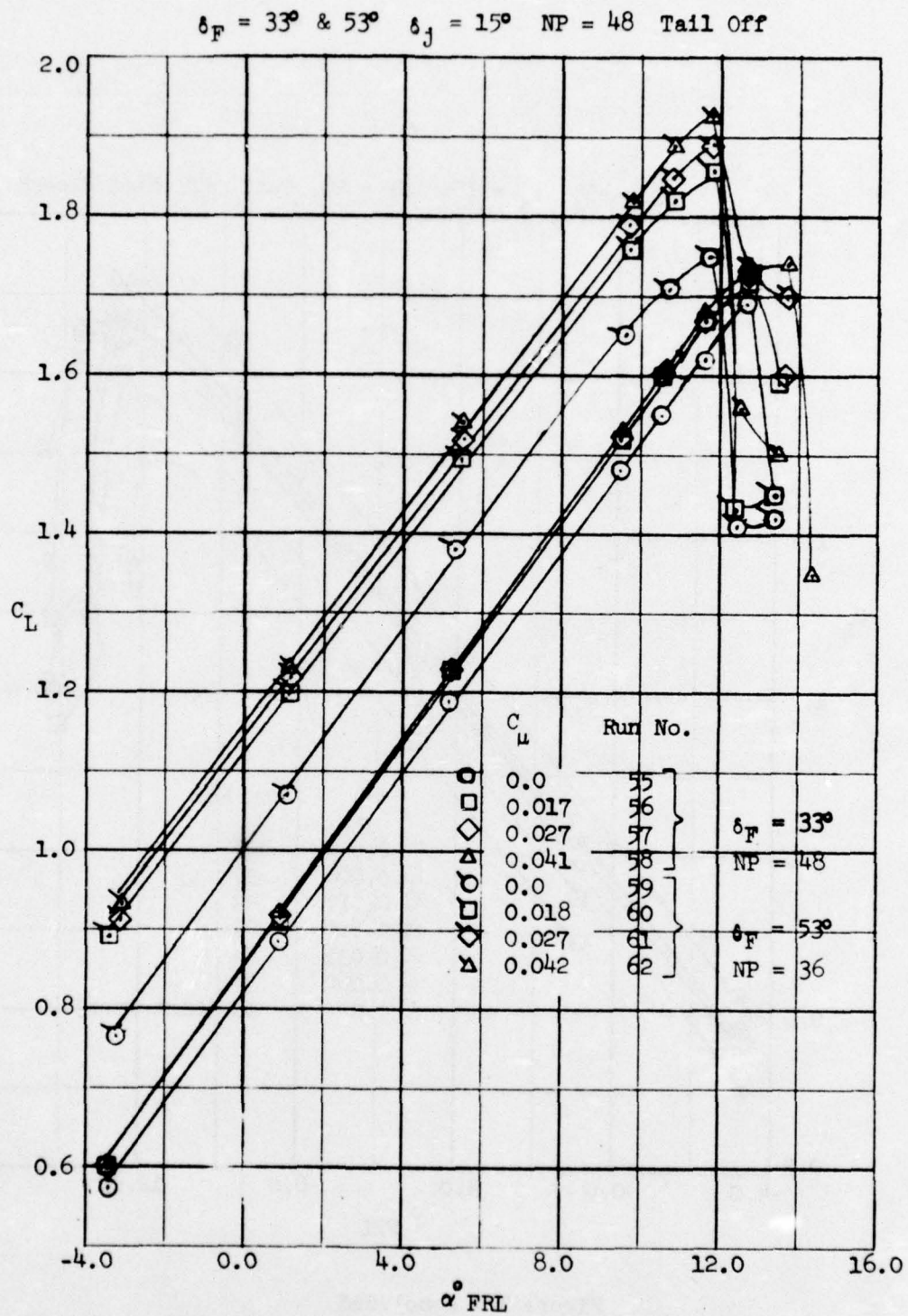


Figure 7 - Continued
(c) Flap at 33° and 53° with Slot Open and Tail Off

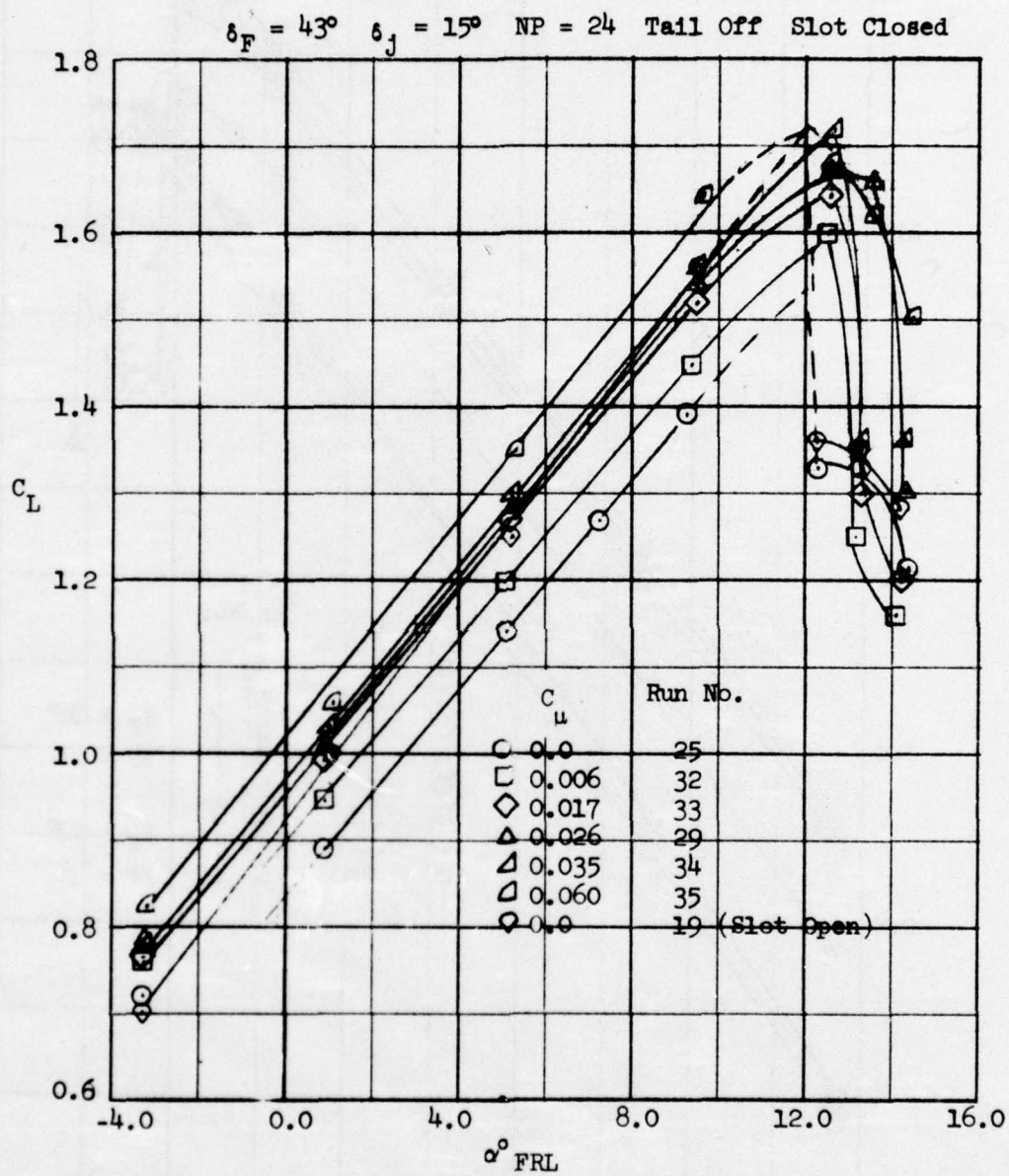


Figure 7 - Concluded
(d) Flap at 43° with Slot Closed and Tail Off

	δ_F	δ_J	NP	Tail	Slot
————	43	15°	48	Off	Open
-----	43	15°	48	On	Open
————	33	15°	48	Off	Open
-----	53	15°	48	Off	Open
— · — ·	43	15°	24	Off	Closed

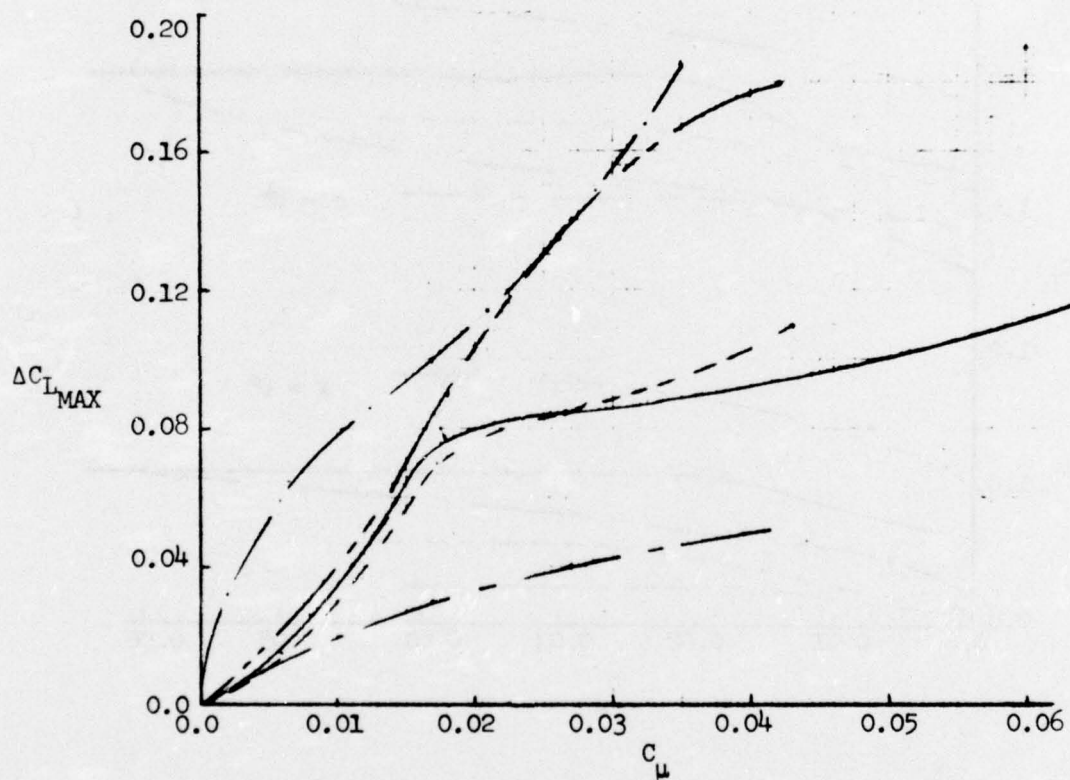


Figure 8 - Variation of Maximum Lift Coefficient with C_μ

	δ_F	δ_J	NP	Tail	Slot
————	43	15°	48	Off	Open
-----	43	15°	48	On	Open
————	33	15°	48	Off	Open
-----	53	15°	48	Off	Open
————	43	15°	24	Off	Closed

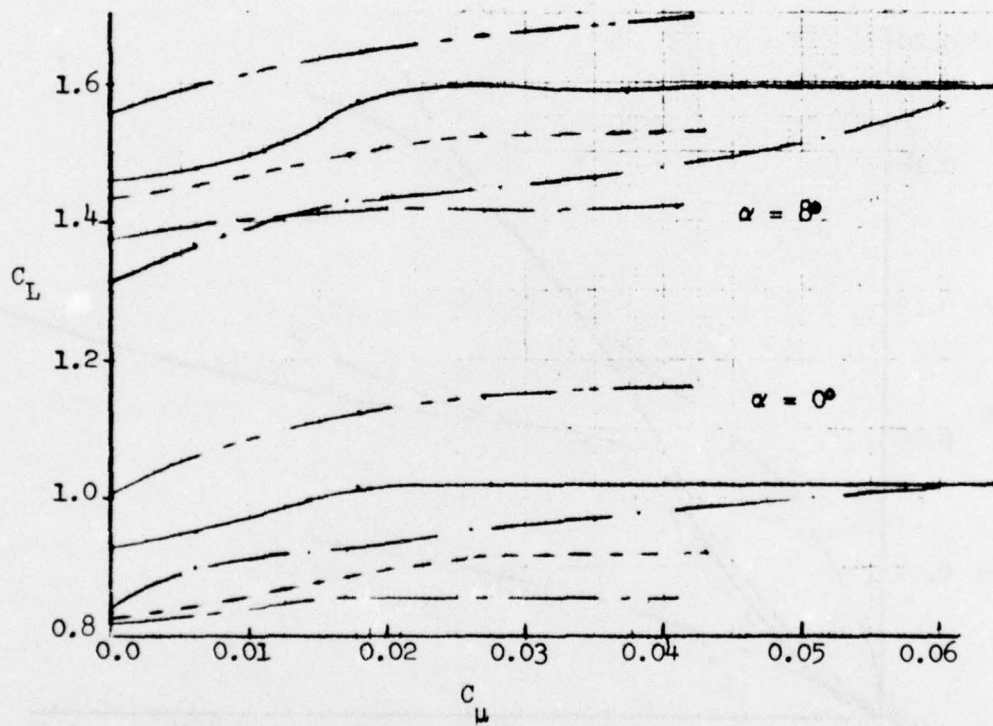


Figure 9 - Variation of Lift Coefficient with C_D at Fixed Angles of Attack

$\delta_F = 43^\circ$ $\delta_J = 15^\circ$ NP = 48 Tail On $\delta_e = 5^\circ$

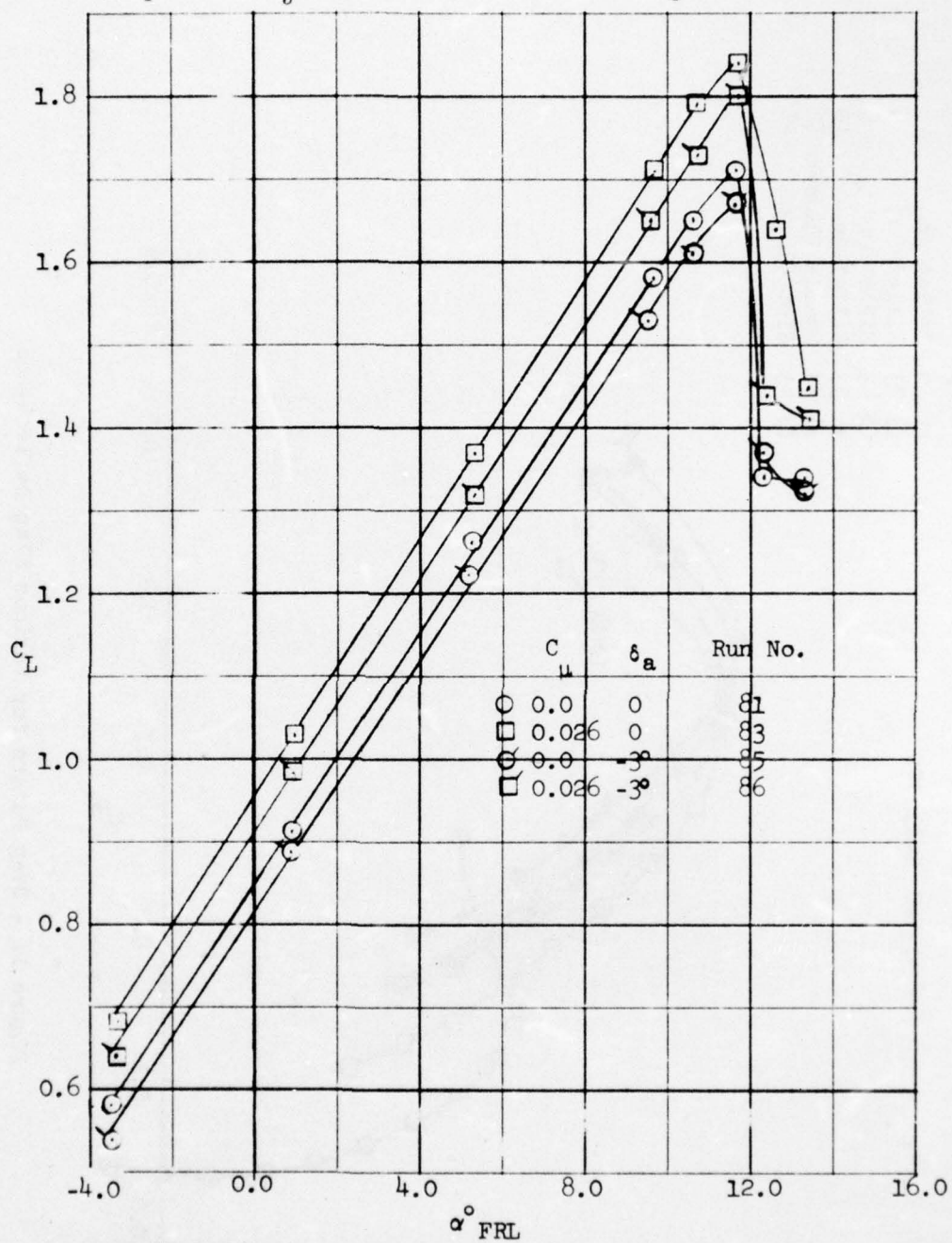


Figure 10 - Effect of Ailerons Uprigged 3°

δ_F	0	Fillet On	Run No.
○	33	Fillet On	8
□	43	Fillet On	9
◇	53	Fillet On	6
△	43	Nozzle Plate On	10
▽	43	Slot Closed	12
□	43	Slot Closed	25

$C_u = 0$ $q \sim 30$ psf Tail Off

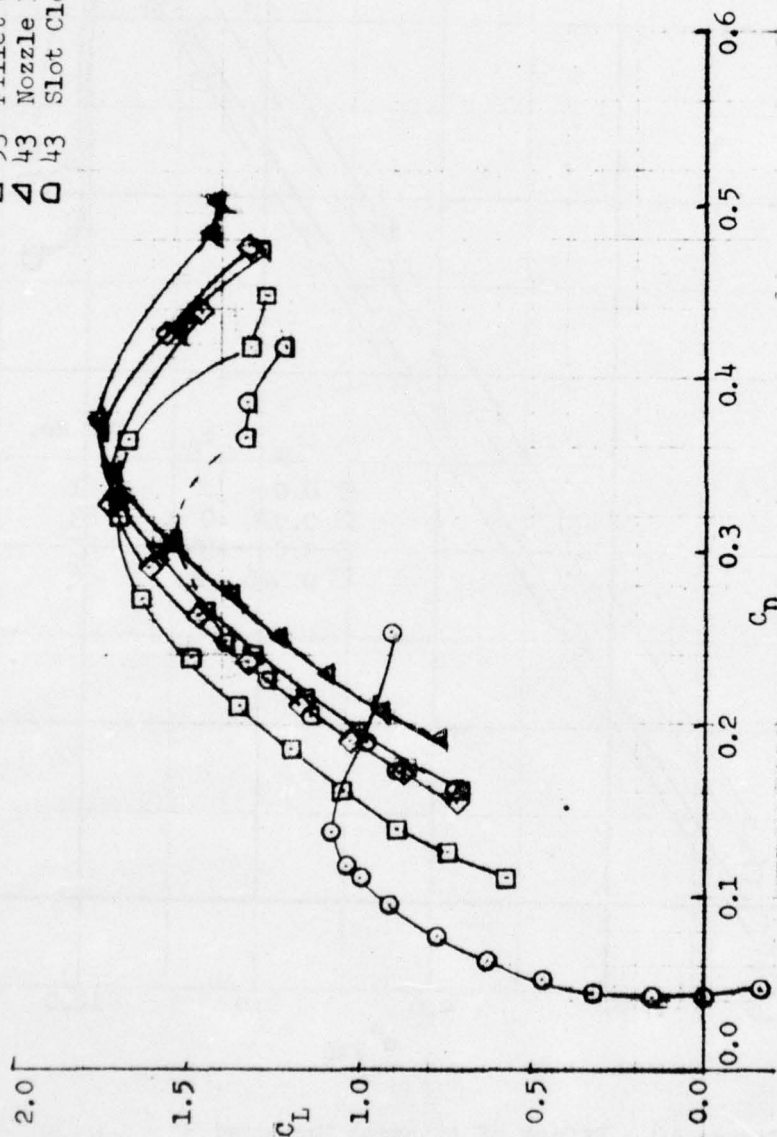


Figure 11 - Drag Polars for Various Flap Deflections

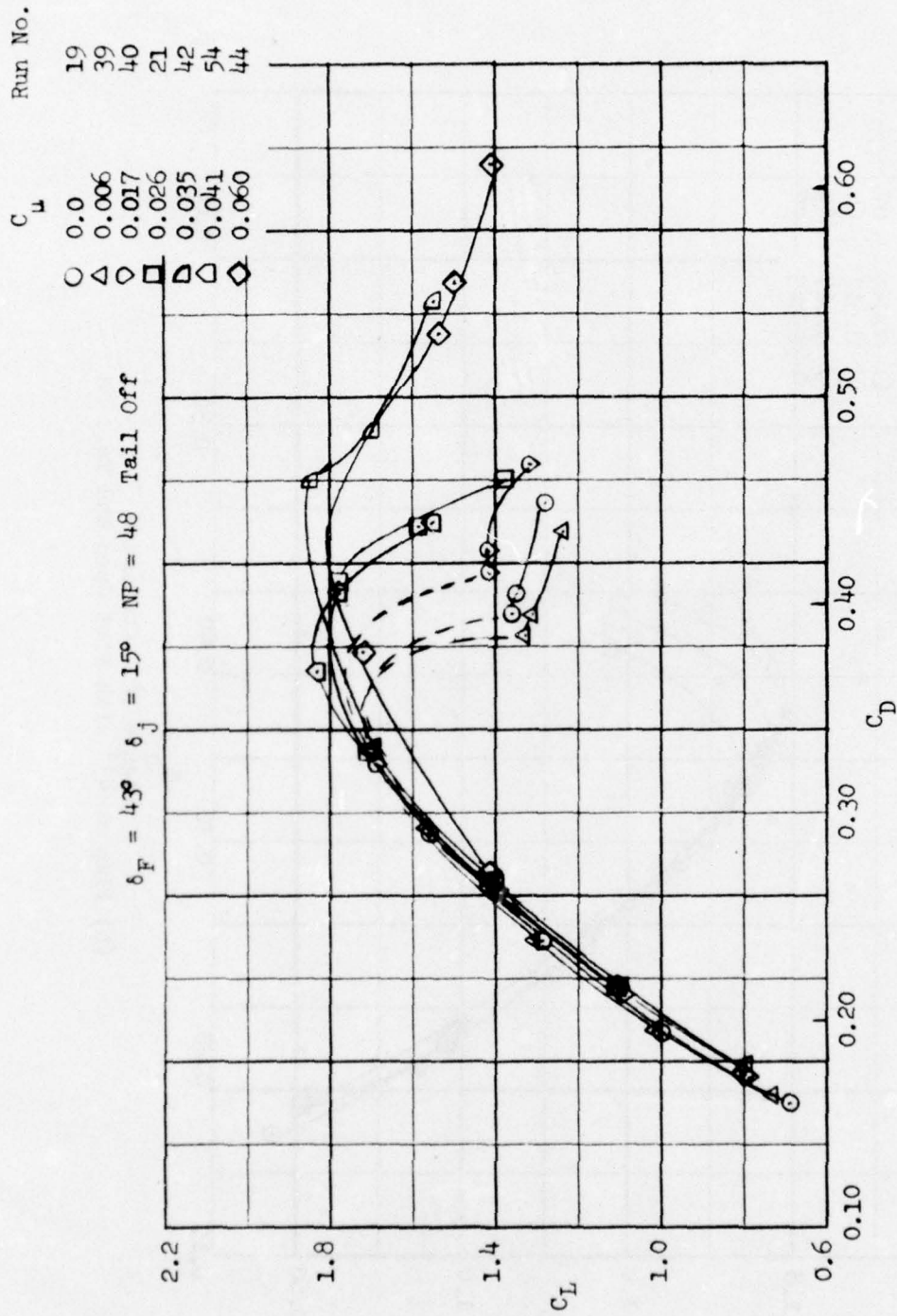


Figure 12 - Effect of C_μ on Drag Polars
 (a) Flap at 43° with Slot Open and Tail Off

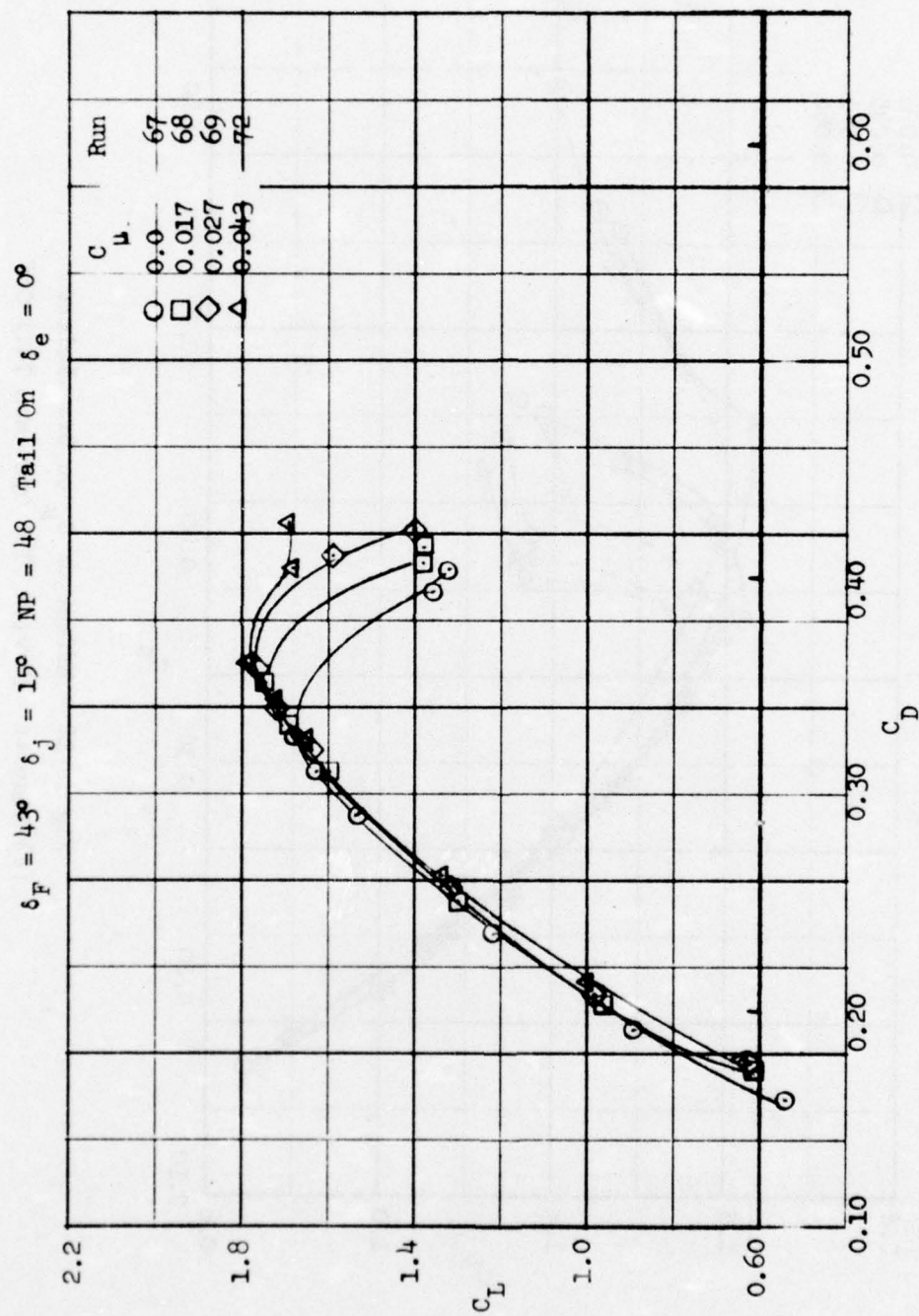


Figure 12 - Continued
(b) Flap at 43° with Slot Open and Tail On

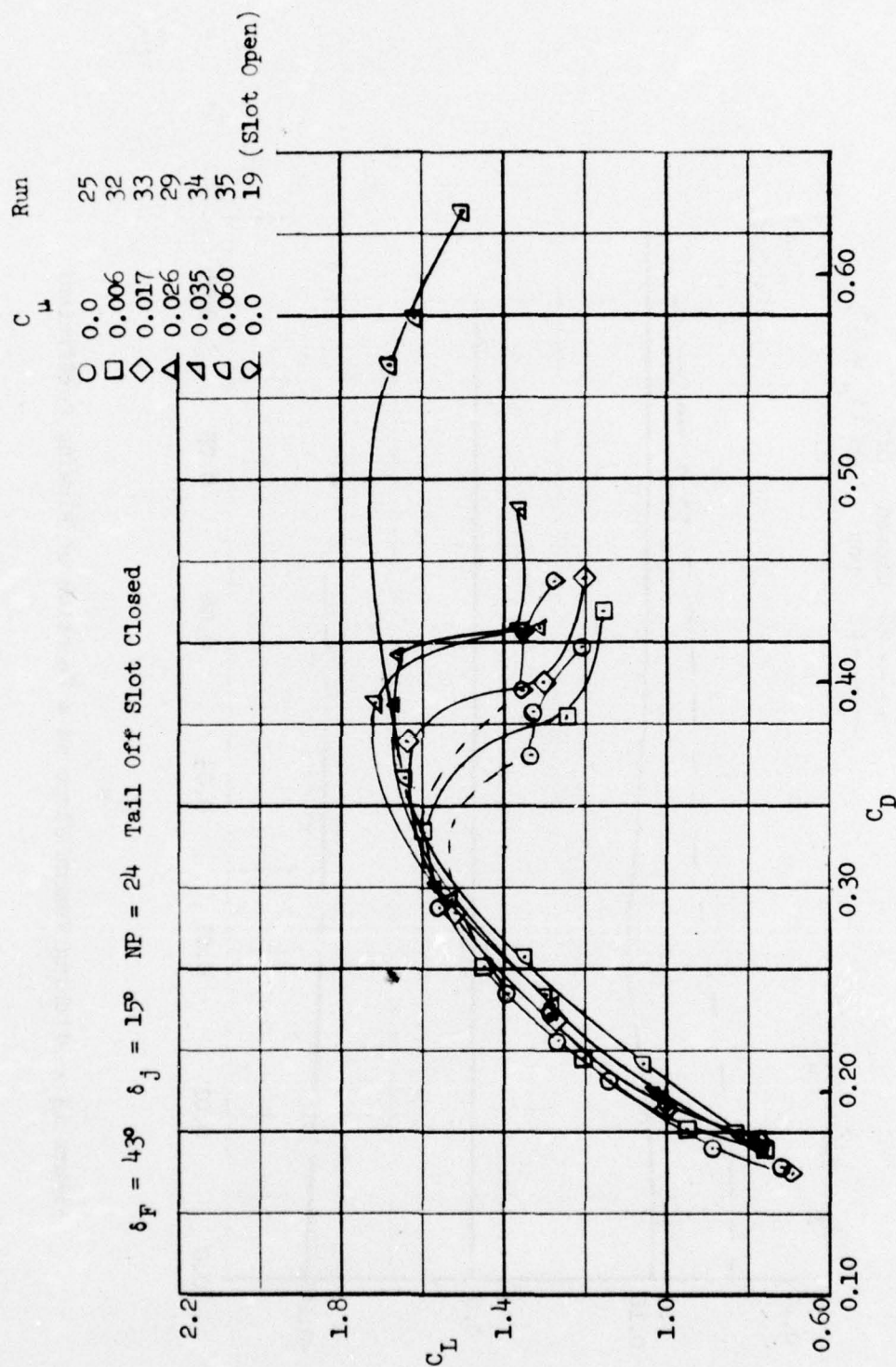


Figure 12 - Concluded
(c) Flap at 43° with Slot Closed and Tail Off

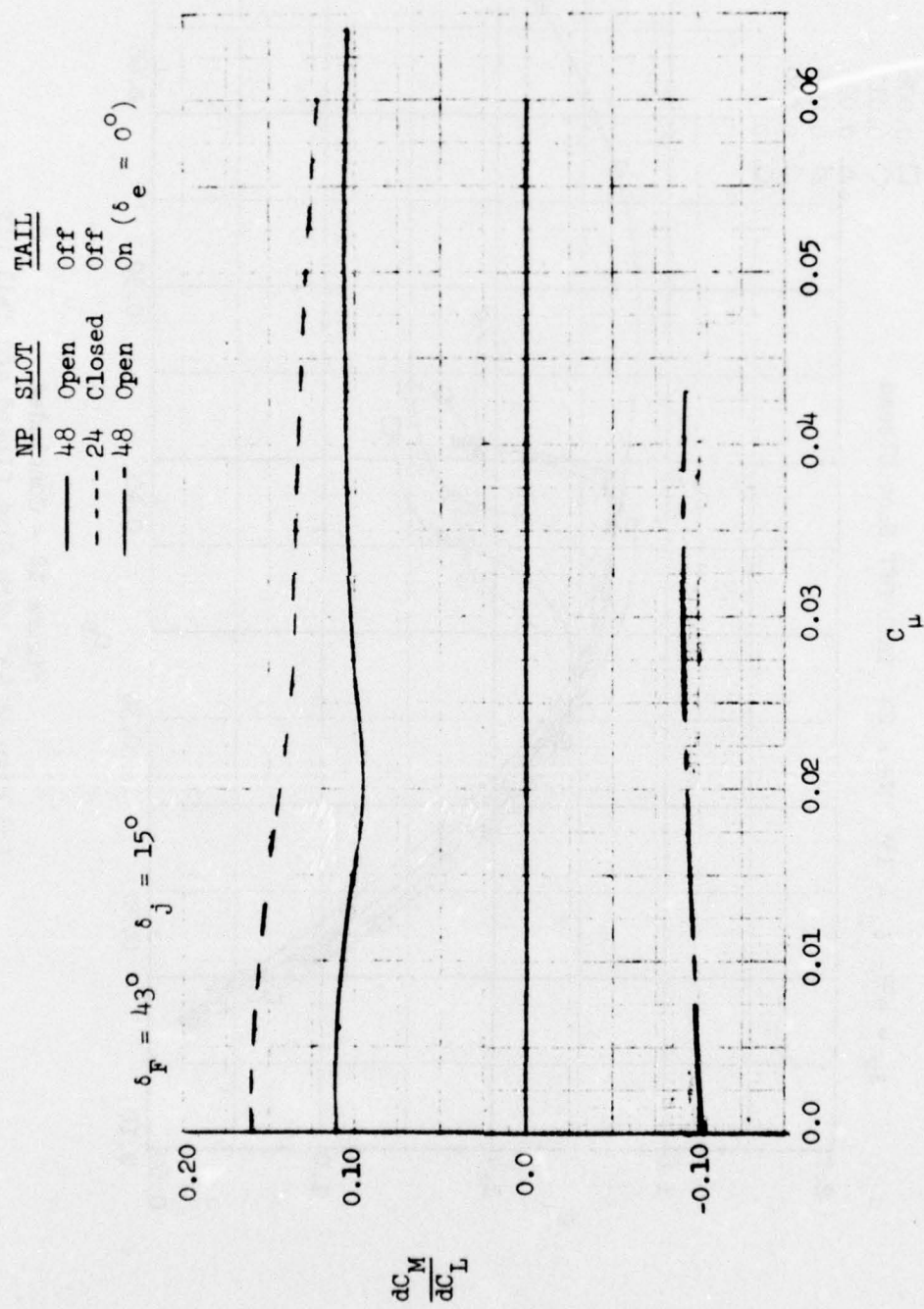


Figure 13 - Pitching Moment Slope as a Function of Blowing Coefficient

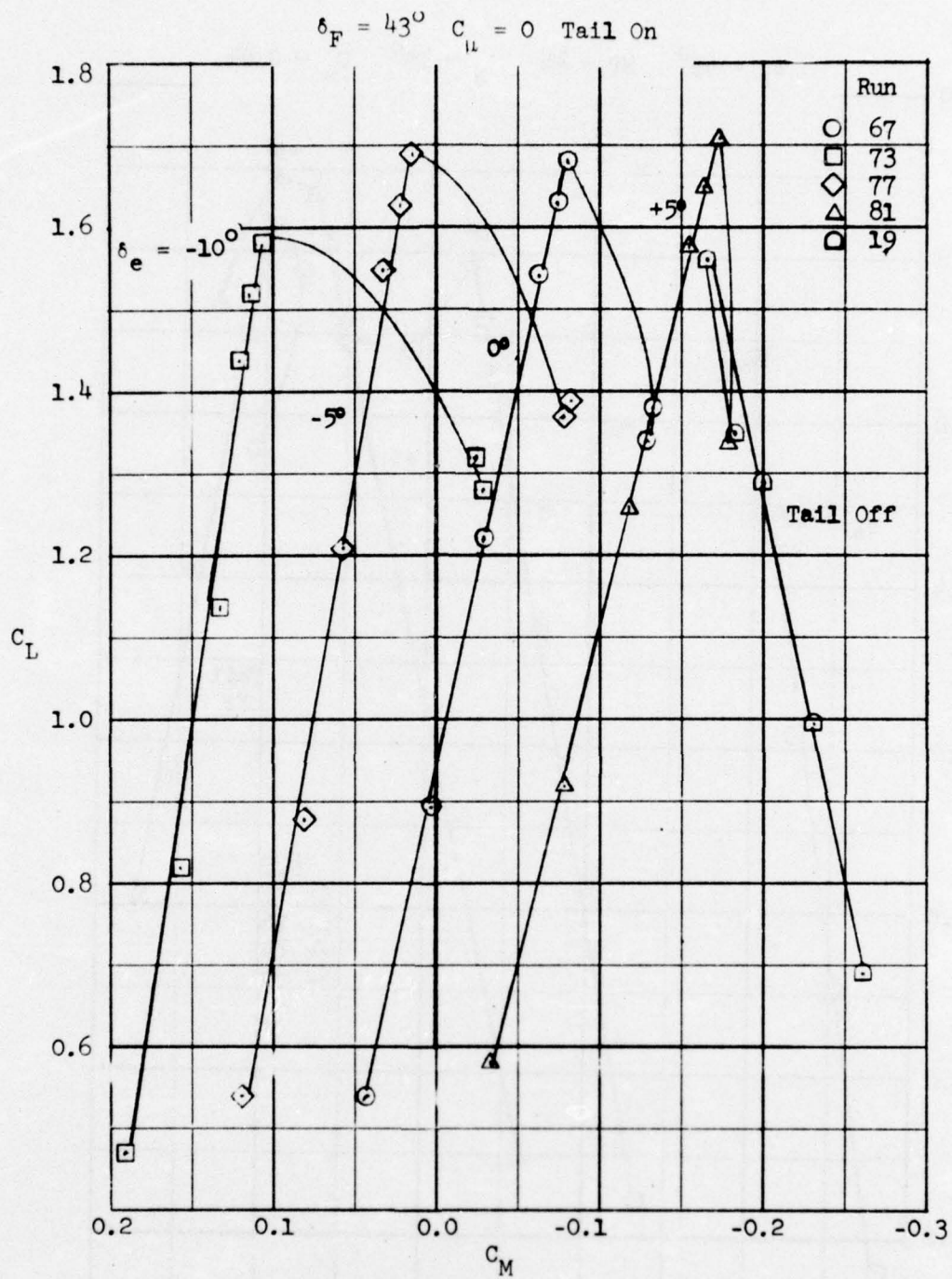


Figure 14 - Elevator Characteristics
(a) No Blowing

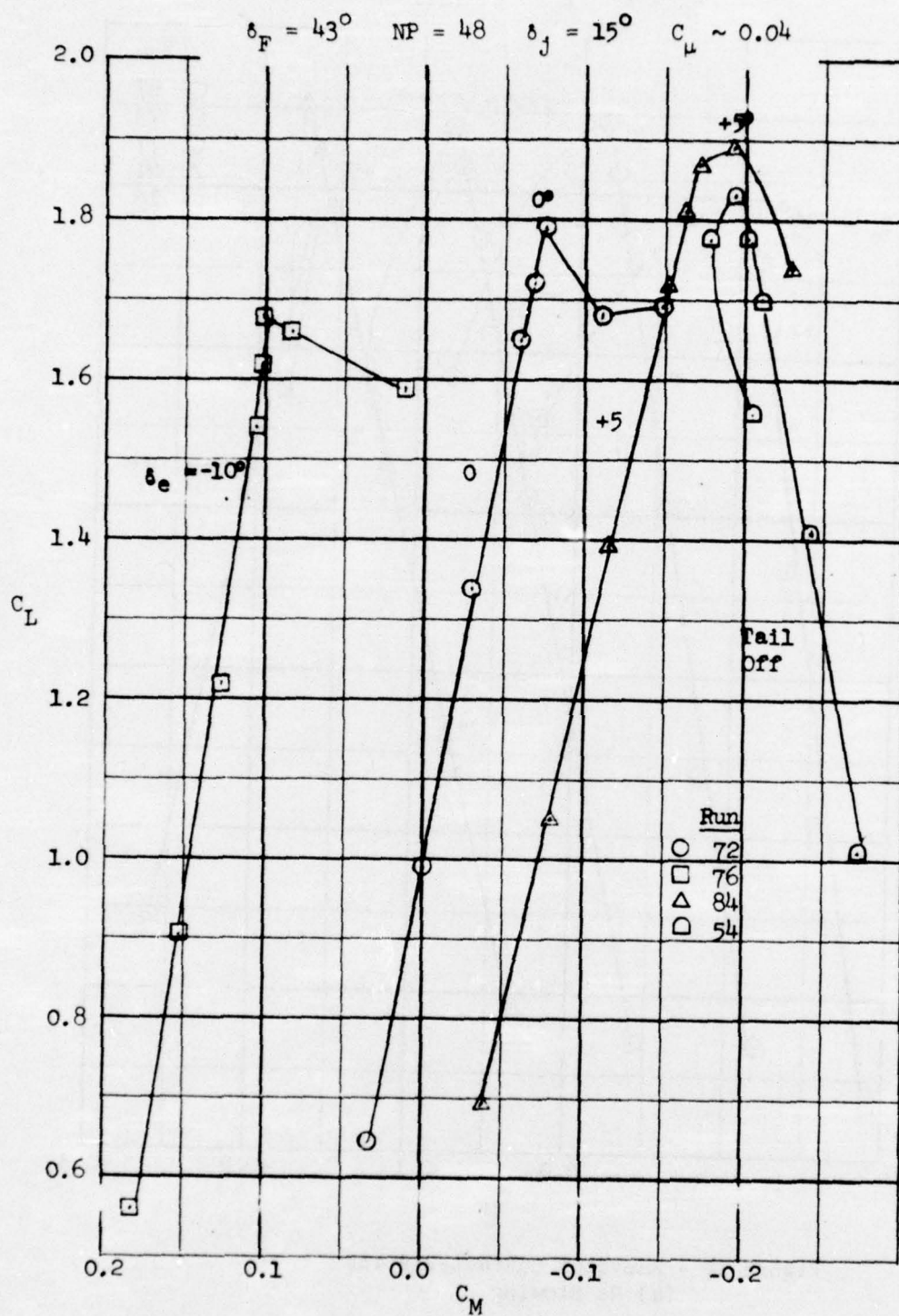


Figure 14 - Concluded
 (b) Spanwise Blowing at a C_μ of 0.04

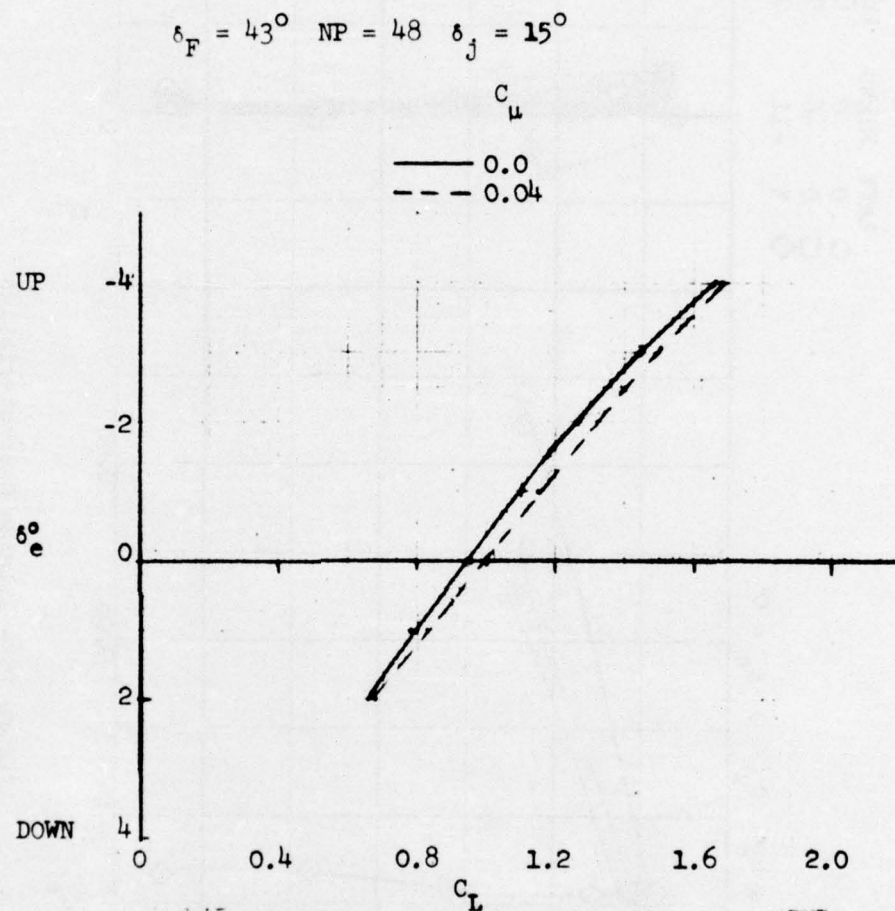


Figure 15 - Elevator Deflections Required for Trimming With and Without Spanwise Blowing

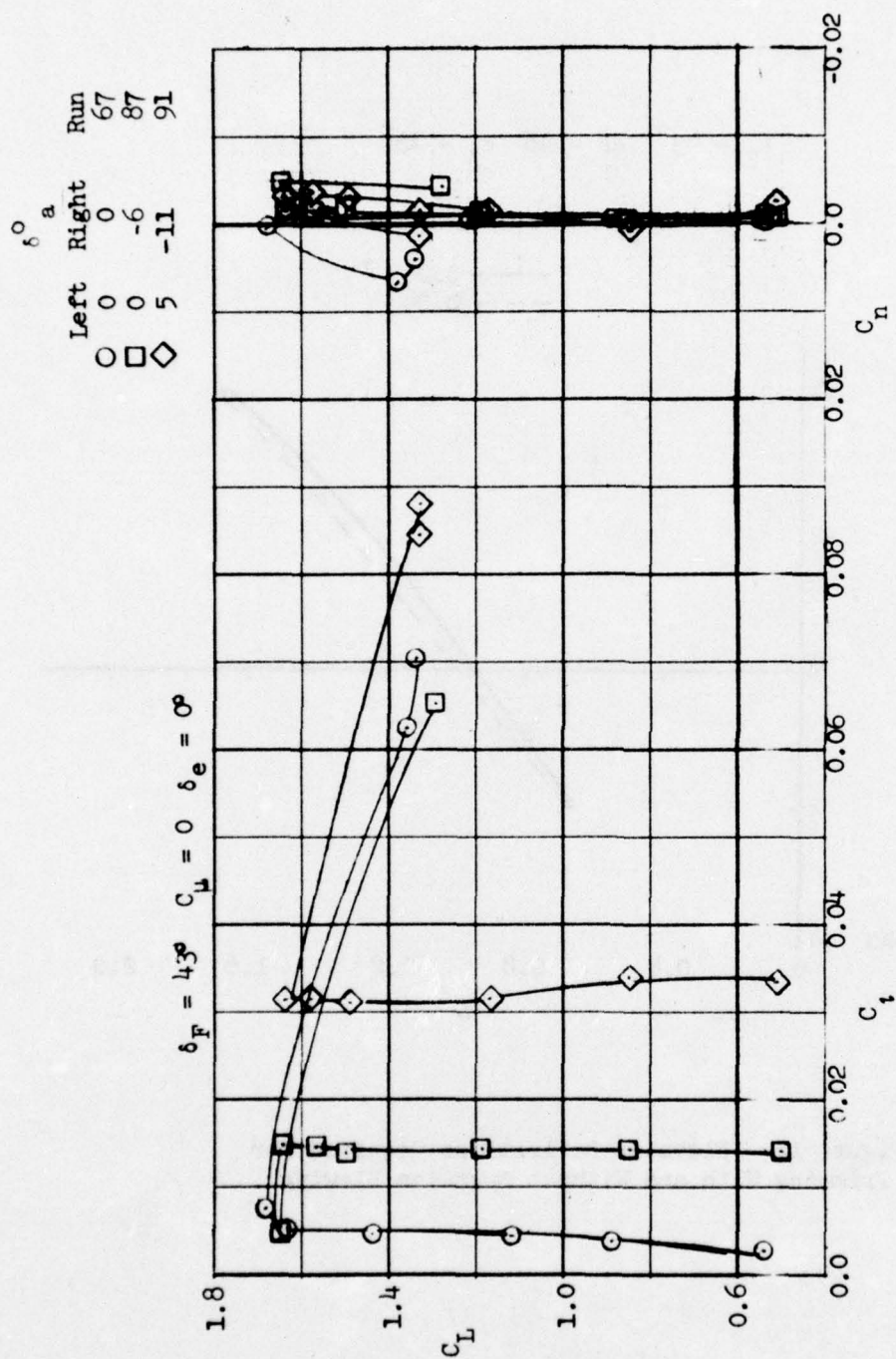


Figure 16 - Aileron Characteristics
(a) Flap at 43° with No Blowing

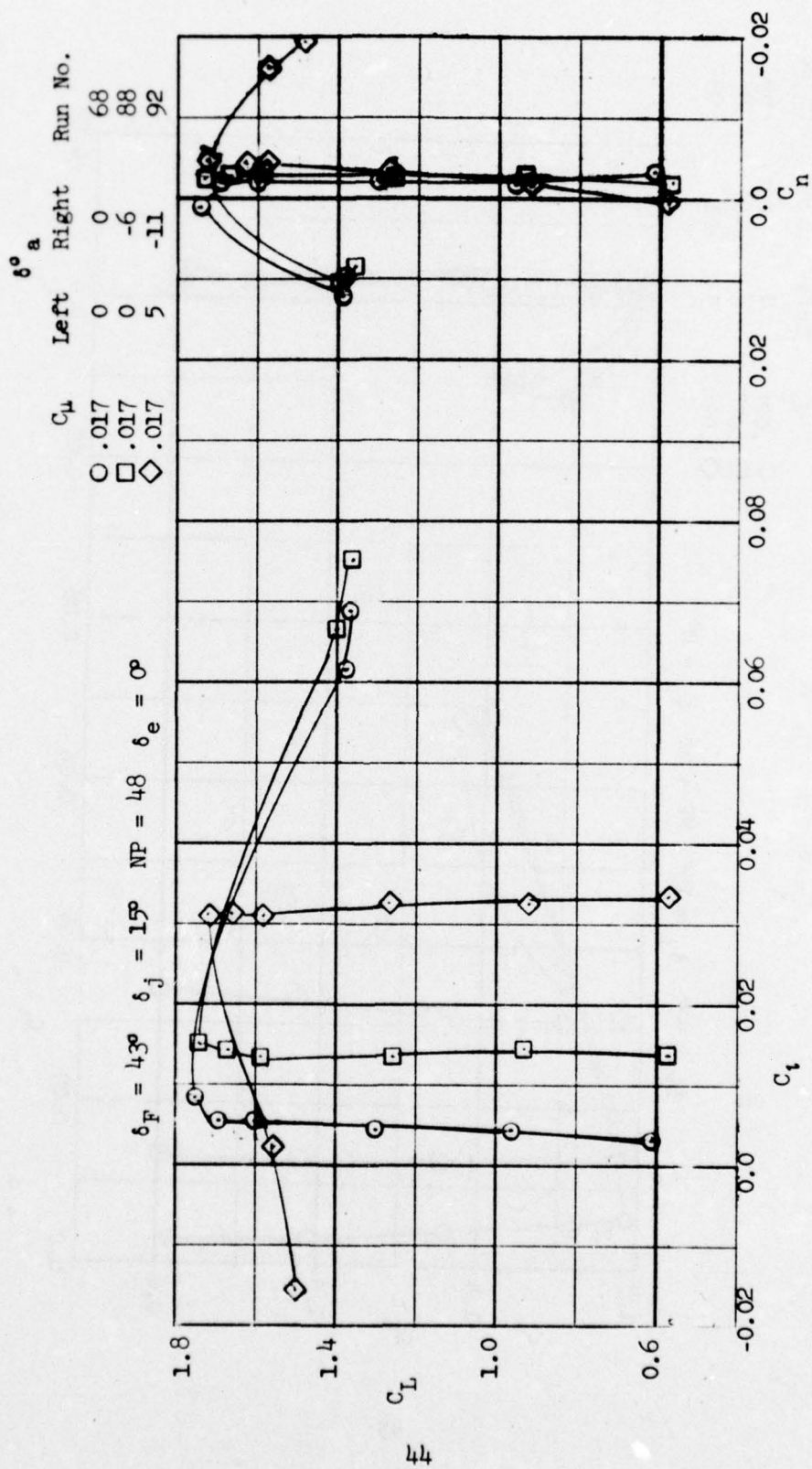


Figure 16 - Continued
 (b) Flap at 43° with $C_\mu = .017$

δ°_a
 Left Right Run No.
 C_μ
 ○ .027 0 0 69
 □ .026 0 -6 89
 ◇ .026 5 -11 93

$\delta_F = 43^\circ$ $\delta_j = 15^\circ$ NP = 48 $\delta_e = 0^\circ$

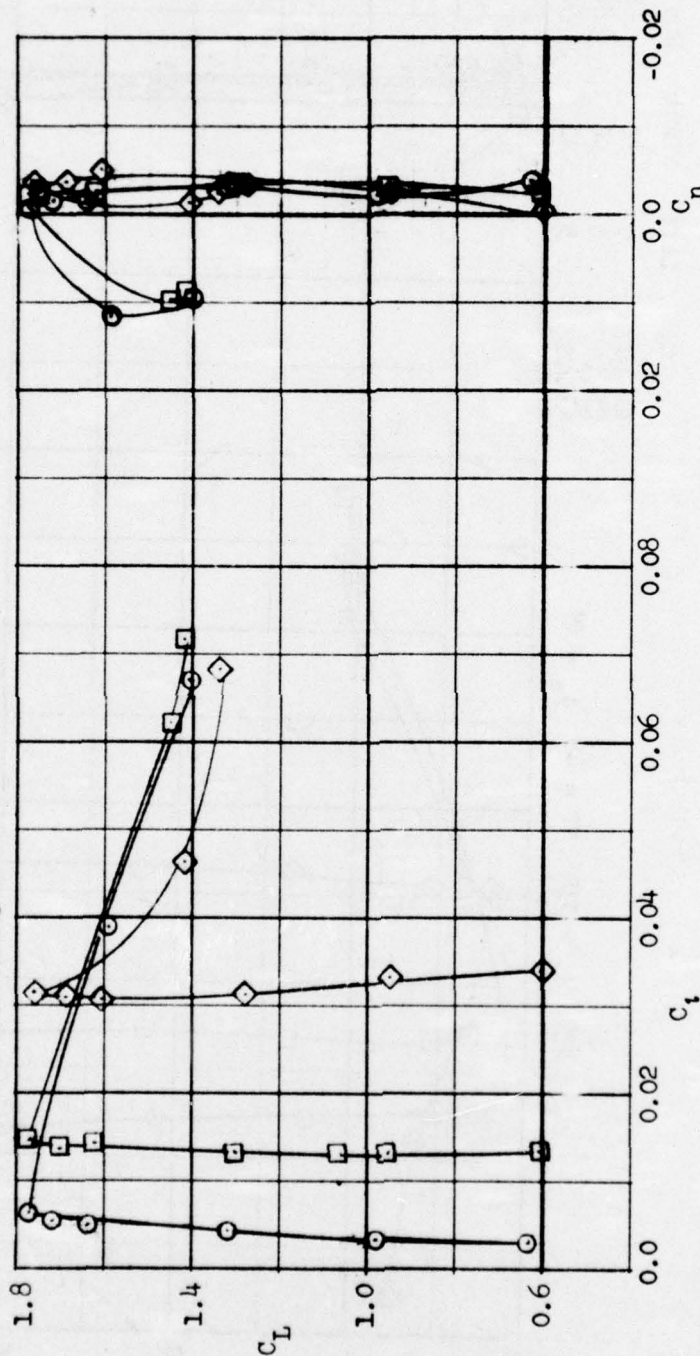


Figure 16 - Continued
 (c) Flap at 43° with $C_\mu = .026$

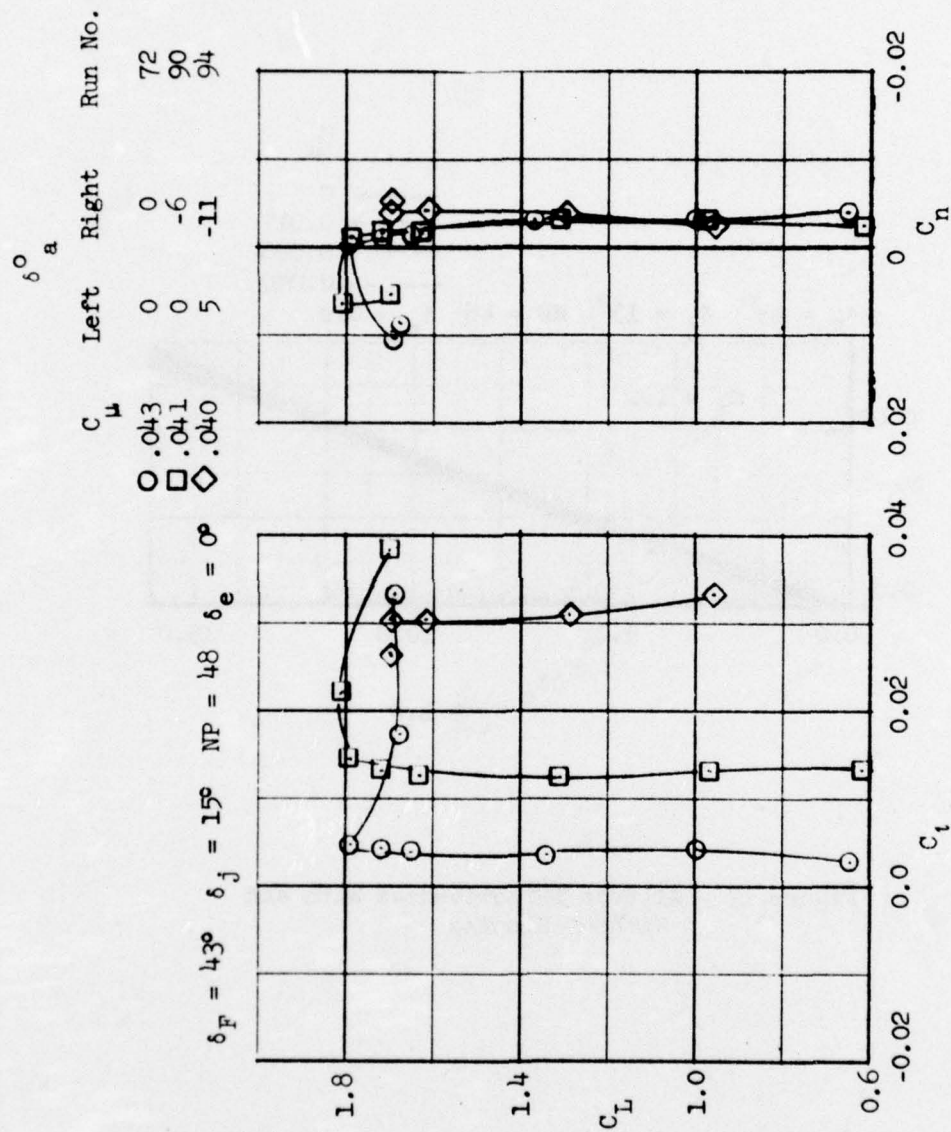


Figure 16 - Concluded
(d) Flap at 43° with $C_\mu = .04$

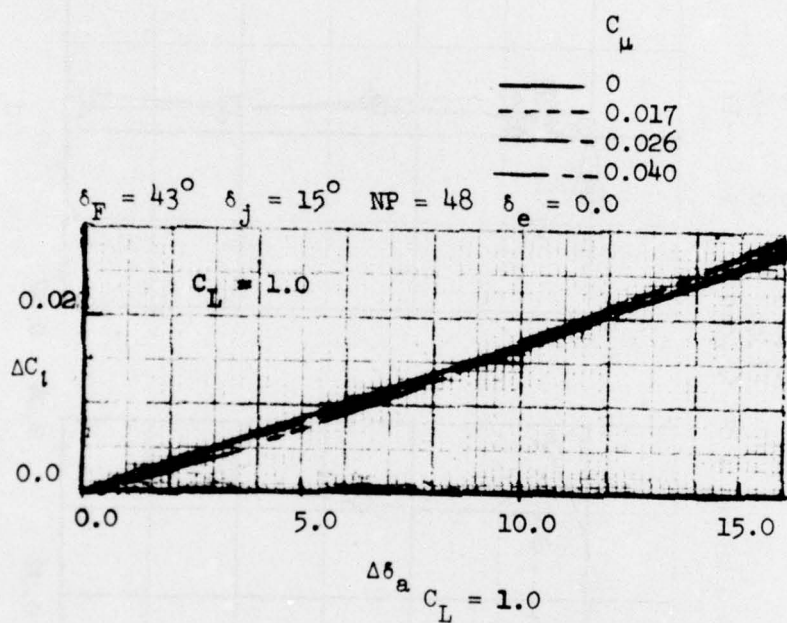


Figure 17 - Aileron Effectiveness With and Without Blowing

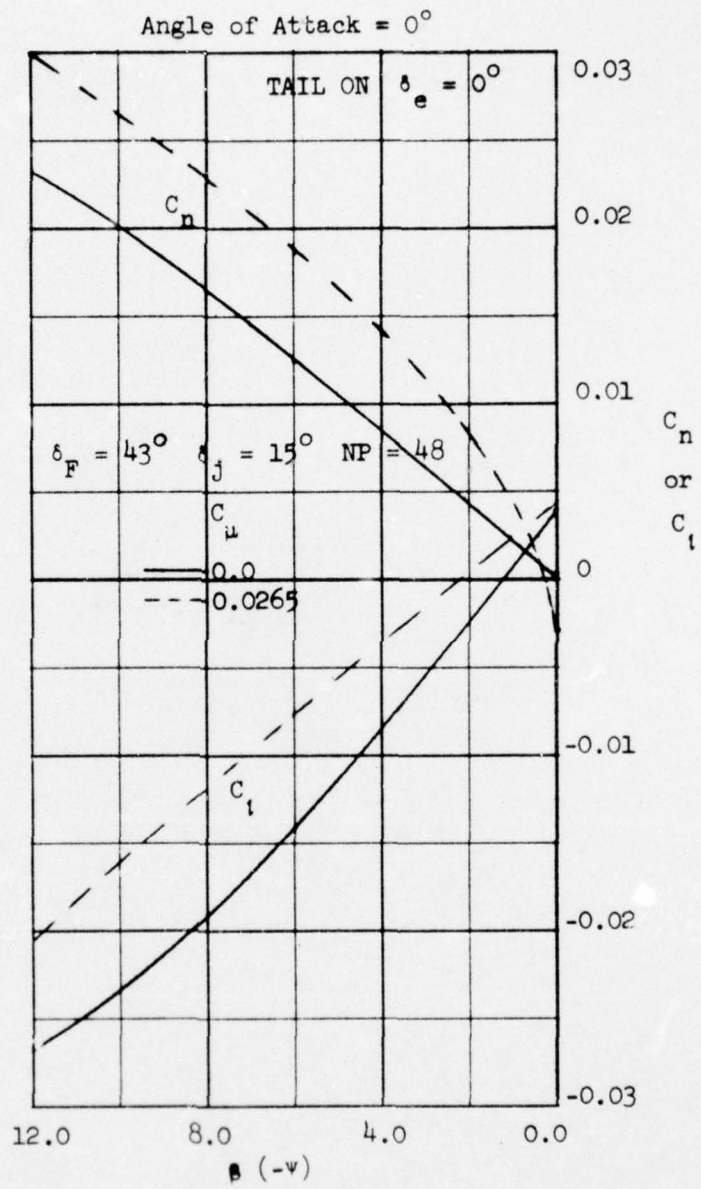


Figure 18 - Lateral Stability

APPENDIX A
TABULATED TEST DATA

Copy available to DDC does not
permit fully legible reproduction

ALPHA	BETA	CLS	CDS	CMS	CRLLS	CYAWS	CYS	Q	V	RN-TUN 10.6	PNZL	PASS FLW	VJET	CMU
RUN NO.	2	CONFIG NO.	1											
.CC	.C4	.C028	.C232	.C0210	.C000	.C0001	.C0012	30.2639	158.09	1.5265	1.8	.0131	0	.00.0
.CC	.C2	.C023	.C244	.C0212	.C001	.C0001	.C0015	30.2516	158.08	1.5256	1.8	.0135	0	.00.0
.CC	.C1	.C016	.C236	.C0212	.C000	.C0002	.C0004	29.9706	157.37	1.5179	1.8	.0137	0	.00.0
4.00	.C2	.C023	.C223	.C0210	.C000	.C0001	.C0002	30.4525	158.66	1.5293	1.8	.0105	0	.00.0
8.00	.C1	.C029	.C212	.C0205	.C000	.C0001	.C0004	30.3514	158.82	1.5261	1.8	.0131	0	.00.0
12.00	.C2	.C030	.C203	.C0205	.C000	.C0001	.C0005	30.0583	157.68	1.5180	1.8	.0066	0	.00.0
16.00	.C2	.C025	.C198	.C0201	.C000	.C0001	.C0005	30.2705	158.26	1.5228	1.8	.0105	0	.00.0
RUN NO.	71	CONFIG NO.	1											
.CC	.C4	.C032	.C047	.C0226	.C005	.C0006	.C0025	30.0751	157.91	1.5147	1.8	.0000	0	.00.0
8.00	.C4	.C034	.C026	.C0221	.C005	.C0005	.C0030	30.2773	158.49	1.5184	1.8	.0000	0	.00.0
16.00	.C4	.C039	.C008	.C0213	.C004	.C0004	.C0026	30.2807	158.55	1.5173	1.8	.0000	0	.00.0
.CC	12.00	.C051	.C010	.C0279	.C011	.C0014	.C0069	30.2604	158.89	1.5072	1.8	.0000	0	.00.0
8.00	12.00	.C032	.C083	.C0279	.C011	.C0011	.C0064	30.3312	159.14	1.5075	1.8	.0013	0	.00.0
16.00	12.00	.C041	.C057	.C0262	.C011	.C0010	.C0052	30.1128	158.61	1.5010	1.8	.0000	0	.00.0
.CC	20.00	.C046	.C012	.C0260	.C025	.C0022	.C0103	30.4795	159.76	1.5056	1.8	.0000	0	.00.0
8.00	20.00	.C049	.C082	.C0252	.C025	.C0017	.C0099	30.2739	159.31	1.4983	1.8	.0000	0	.00.0
16.00	20.00	.C049	.C056	.C0241	.C024	.C0012	.C0090	30.2705	159.34	1.4973	1.8	.0059	0	.00.0
RUN NO.	2	CONFIG NO.	2											
.99	.CC	1.0207	.1713	.2426	.C046	.C0008	.C0010	30.3135	158.83	1.5135	1.8	.0013	0	.00.0
-1.16	.CC	.8705	.1713	.2562	.C041	.C0005	.C0053	30.1499	158.44	1.5084	1.8	.0000	0	.00.0
-3.31	.CC	.7131	.1572	.2731	.C040	.C0002	.C0080	30.3234	158.95	1.5115	1.8	.0000	0	.00.0
.99	.CC	1.0236	.1896	.2420	.C043	.C0005	.C0022	30.5043	159.43	1.5159	1.8	.0000	0	.00.0
3.13	.CC	1.1744	.2120	.2246	.C043	.C0014	.C0044	30.1942	158.62	1.5081	1.8	.0013	0	.00.0
5.28	.CC	1.3275	.2370	.2076	.C049	.C0016	.C0014	30.1159	158.46	1.5049	1.8	.0132	0	.00.0
7.42	.CC	1.4704	.2636	.1895	.C048	.C0025	.C0014	30.1192	158.53	1.5037	1.8	.0137	0	.00.0
9.55	.CC	1.6029	.2913	.1725	.C055	.C0015	.C0014	30.1261	158.58	1.5029	1.8	.0132	0	.00.0
11.66	.CC	1.7236	.3292	.1540	.C073	.C0007	.C0004	30.0681	158.46	1.5008	1.8	.0137	0	.00.0
13.52	.CC	1.5756	.4251	.1742	.C091	.C0012	.C0090	30.3339	159.29	1.5042	1.8	.0137	0	.00.0
RUN NO.	6	CONFIG NO.	3											
.99	.CC	1.0265	.1891	.2362	.C037	.C0004	.C0063	30.2181	159.39	1.4939	1.8	.0000	0	.00.0
-1.15	.CC	.8200	.1716	.2520	.C037	.C0000	.C0024	30.2555	159.56	1.4931	1.8	.0000	0	.00.0
-3.30	.CC	.7210	.1551	.2666	.C039	.C0002	.C0042	30.2677	159.67	1.4916	1.8	.0097	0	.00.0
.99	.CC	1.0275	.1890	.2366	.C044	.C0003	.C0094	30.3482	159.91	1.4928	1.8	.0136	0	.00.0
3.14	.CC	1.1827	.2110	.2182	.C037	.C0007	.C0005	30.2181	159.61	1.4887	1.8	.0187	0	.00.0
5.29	.CC	1.3316	.2356	.2027	.C044	.C0010	.C0048	30.2863	159.82	1.4896	1.8	.0229	0	.00.0
7.42	.CC	1.4721	.2619	.1846	.C046	.C0012	.C0016	30.1636	159.53	1.4857	1.8	.0229	0	.00.0
9.55	.CC	1.6084	.2908	.1679	.C057	.C0015	.C0015	30.5077	160.49	1.4930	1.8	.0264	0	.00.0
11.67	.CC	1.7283	.3269	.1487	.C085	.C0010	.C0013	30.3169	160.04	1.4871	1.8	.0255	0	.00.0
12.41	.CC	1.4600	.4387	.1919	.C061	.C0025	.C0064	30.4844	160.55	1.4826	1.8	.0238	0	.00.0
13.50	.CC	1.5580	.4253	.1715	.C038	.C0106	.C0132	30.2181	159.94	1.4808	1.8	.0250	0	.00.0
14.27	.CC	1.3151	.4777	.1848	.C085	.C00149	.C0232	30.3033	160.29	1.4800	1.8	.0230	0	.00.0

[illegible]

ALPHA	BETA	CLS	CDS	CMS	CRLLS	CYAMS	CYS	Q	V	RN-TUN 10*6	PNØZL	MASS FLW	VJET	C*U
RUN NO. 9	19	CONFIG NO. 9	1937	2327	0046	0012	0012	31.0302	162.57	1.5139	14.5	0.000	0	0.000
3.33	03	1590	2601	0034	0003	0003	0003	31.0495	162.59	1.5144	14.5	0.000	0	0.000
5.24	03	1377	2377	0040	0006	0006	0006	31.0733	162.73	1.5132	14.5	0.000	0	0.000
9.50	03	1287	2004	0054	0001	0001	0001	30.8791	162.26	1.5074	14.5	0.000	0	0.000
12.31	02	1358	2004	0054	0004	0004	0004	30.8042	162.17	1.5032	14.5	0.000	0	0.000
13.30	01	1348	3057	0674	0063	0063	0063	32.1261	165.74	1.5320	14.5	0.000	0	0.000
14.24	01	1348	4053	0724	0091	0091	0091	32.2248	166.06	1.5329	14.5	0.000	0	0.000
RUN NO. 9	20	CONFIG NO. 9	4498	1835	0614	0014	0014	32.5307	167.08	1.5396	14.5	0.000	0	0.000
1.04	04	10791	2125	0024	0021	0021	0021	30.9541	162.68	1.5032	52.6	0.195	140.4	0.0270
3.35	04	1770	2885	0014	0009	0009	0009	31.0188	162.88	1.5041	52.6	0.198	140.4	0.0270
5.33	04	1036	2128	0024	0019	0019	0019	31.0700	163.09	1.5034	52.6	0.197	140.4	0.0270
9.60	04	1376	2098	0028	0009	0009	0009	31.1823	163.45	1.5048	52.6	0.195	140.4	0.0270
12.53	04	1354	3049	0040	0013	0013	0013	31.1074	163.29	1.5021	52.6	0.195	140.4	0.0270
13.54	04	1387	3049	0293	0049	0049	0049	31.4890	164.38	1.5022	52.6	0.193	140.4	0.0270
14.31	03	1340	4151	0333	0056	0056	0056	31.6048	164.72	1.5111	52.6	0.190	140.4	0.0270
RUN NO. 10	21	CONFIG NO. 10	4521	1790	0709	0004	0004	32.2004	166.39	1.5223	52.6	0.192	140.4	0.0270
1.07	00	1109	2158	0042	0029	0029	0029	30.4055	158.58	1.5560	52.8	0.189	141.4	0.0270
3.37	00	1721	2663	0046	0030	0030	0030	30.5895	159.12	1.5593	52.8	0.180	141.4	0.0270
5.65	00	1712	3290	0064	0031	0031	0031	30.6717	159.44	1.5605	52.8	0.185	141.4	0.0270
12.73	00	1786	4114	0140	0064	0064	0064	31.0665	160.48	1.5683	52.8	0.185	141.4	0.0270
13.54	00	1541	4075	0140	0094	0094	0094	31.4583	161.57	1.5761	52.8	0.184	141.4	0.0270
14.34	00	1328	4604	0580	0002	0002	0002	31.8473	162.67	1.5832	52.8	0.184	141.4	0.0270
RUN NO. 11	22	CONFIG NO. 11	4604	1994	0580	0002	0002	31.8473	162.67	1.5832	52.8	0.184	141.4	0.0270
1.02	00	1358	2045	0030	0005	0005	0005	30.6542	159.41	1.5553	52.6	0.182	141.4	0.0270
3.27	00	1758	2812	0030	0016	0016	0016	30.8234	160.10	1.5625	52.6	0.186	141.4	0.0270
5.32	00	1359	2042	0032	0008	0008	0008	30.8178	159.87	1.5587	52.6	0.181	141.4	0.0270
9.59	00	1355	2050	0032	0003	0003	0003	30.8693	160.10	1.5593	52.6	0.185	141.4	0.0270
12.71	00	1344	3112	0040	0004	0004	0004	30.8283	160.00	1.5563	52.6	0.186	141.4	0.0270
13.68	00	1771	3662	0082	0003	0003	0003	31.1857	160.96	1.5644	52.6	0.186	141.4	0.0270
14.34	00	1736	4481	0082	0042	0042	0042	31.1687	160.95	1.5631	52.6	0.186	141.4	0.0270
15.34	00	1384	4481	0733	0008	0008	0008	32.3304	164.06	1.5886	52.6	0.185	141.4	0.0270

ALPHA	BETA	CLS	CCG	CMS	CELLS	CYAKS	CYC	Q	V	PNØZL	MASS FLOW	VJET	CMU
RUN NØ.	23	CNØ16	NØ.	12	.0019	.0018	-.0077	30.8212	16.37	1.5462	5246	1416.7	.0217
-3.36	.02	.6594	.1442	-.2579	.0007	.0004	.0051	30.8291	16.55	1.5468	5246	1417.7	.0217
5.89	.00	.6654	.1071	-.2265	.0014	.0003	.0043	30.8393	16.60	1.5464	5246	1418.2	.0217
9.28	.03	1.6492	.2331	-.1936	.0025	.0003	.0060	30.9447	16.31	1.5473	5246	1418.5	.0217
12.42	.00	1.6474	.2739	-.1634	.0037	-.0002	.0064	30.7531	16.36	1.5472	5246	1418.7	.0217
13.61	.04	1.6832	.3739	-.1387	.0123	.0072	.0064	31.1322	16.55	1.5498	5246	1418.8	.0217
14.51	.00	1.6705	.4241	-.1426	.0090	.0039	.0100	31.1353	16.54	1.5488	5246	1418.5	.0216
RUN NØ.	24	1.6551	.4411	-.1641	.0321	.0045	-.0464	31.5747	162.67	1.5564	5246	1418.0	.0245
1.44	.03	CNØ16	NØ.	13	.0022	-.0024	.0023	30.6882	160.34	1.5347	5247	1418.3	.0247
-3.36	.02	.7742	.1249	-.2632	.0018	.0007	.0011	30.9245	161.90	1.5417	5247	1419.2	.0245
1.06	.04	.9212	.2101	-.2620	.0024	.0018	.0043	30.8227	161.88	1.5396	5247	1421.5	.0245
9.42	.03	1.9108	.2064	-.2224	.0035	-.0012	.0022	30.9357	161.88	1.5381	5247	1422.1	.0245
12.55	.03	1.6784	.3044	-.2001	.0047	-.0008	.0016	30.9332	161.00	1.5385	5247	1422.1	.0245
13.61	.04	1.6068	.4139	-.1805	.0361	.0079	.0034	31.5445	161.72	1.5510	5247	1421.3	.0245
14.51	.02	1.5932	.4259	-.1891	.0427	.0104	.0533	31.7122	161.24	1.5545	5247	1421.5	.0245
RUN NØ.	25	1.4914	.4476	-.1895	.0746	.0001	-.0729	32.1124	161.31	1.5627	5247	1421.2	.0245
1.44	.03	CNØ16	NØ.	14	.0013	.0009	-.0054	30.9477	161.19	1.5402	1445	0	.0040
-3.36	.02	.7214	.1333	-.2436	.0005	.0007	.0019	30.8223	161.90	1.5389	1445	0	.0040
5.89	.04	.8906	.1222	-.1872	.0012	.0011	.0109	30.8460	161.93	1.5393	1445	0	.0040
9.28	.03	1.4714	.2444	-.1461	.0017	.0002	.0031	31.1381	161.60	1.5453	1445	0	.0040
12.42	.05	1.2707	.2446	-.1254	.0020	-.0003	.0031	31.1060	161.51	1.5440	1445	0	.0040
13.61	.05	1.5332	.2432	-.1075	.0029	-.0009	.0022	30.8380	161.82	1.5348	1445	0	.0040
14.51	.03	1.3235	.3430	-.1178	.0346	-.0131	.0073	31.9323	161.77	1.5636	1445	0	.0040
RUN NØ.	26	1.2079	.4479	-.1230	.0364	-.0111	.0001	32.1394	161.24	1.5675	1445	0	.0040
1.01	.04	1.2079	.4479	-.1426	.0621	.0005	-.0424	32.2214	161.54	1.5673	1445	0	.0040
1.44	.00	CNØ16	NØ.	14	.0018	.0004	-.0012	30.6662	161.44	1.5276	5247	1411.0	.0247
-3.36	.00	.7991	.1322	-.2721	.0005	.0013	.0004	31.0203	161.63	1.5394	5247	1411.8	.0247
5.89	.04	1.4337	.2577	-.2350	.0018	.0000	.0040	30.9360	161.58	1.5324	5247	1413.2	.0247
9.28	.00	1.3237	.2553	-.2005	.0006	-.0007	.0019	30.9360	161.48	1.5294	5247	1413.2	.0247
12.42	.03	1.5805	.3955	-.1674	.0046	-.0011	.0026	31.0288	161.84	1.5310	5247	1413.3	.0247
13.61	.02	1.6079	.4433	-.1382	.0142	.0004	-.0072	31.6115	161.22	1.5433	5247	1412.0	.0247
14.51	.00	1.3692	.4401	-.1656	.0422	.0062	-.0771	31.8011	161.10	1.5459	5247	1411.0	.0247
RUN NØ.	27	1.3237	.4433	-.1633	.0677	-.0006	-.0637	32.2230	161.26	1.5560	5247	1411.5	.0247

ALPHA	BETA	CLS	CDS	CMS	CPOLLS	CYAMS	CYS	Q	V	RN-TUN 10**6	PNOLZ	MASS FLOW	VJET	CMU
RUN NO.	27	CONFIG NO. 15												
1.013	1.982	1.013	1.982	1.013	1.982	1.013	1.982	1.013	1.982	1.5313	52.4	18.1	1407.2	02.58
1.756	1.697	1.756	1.697	1.756	1.697	1.756	1.697	1.756	1.697	1.5403	52.4	18.62	1409.2	02.59
1.010	1.990	1.010	1.990	1.010	1.990	1.010	1.990	1.010	1.990	1.5360	52.4	18.18	1410.6	02.59
1.221	1.432	1.221	1.432	1.221	1.432	1.221	1.432	1.221	1.432	1.5381	52.4	18.23	1412.0	02.59
1.544	1.308	1.544	1.308	1.544	1.308	1.544	1.308	1.544	1.308	1.5399	52.4	18.32	1412.9	02.59
1.691	1.308	1.691	1.308	1.691	1.308	1.691	1.308	1.691	1.308	1.5560	52.4	18.1	1413.4	02.59
1.675	1.469	1.675	1.469	1.675	1.469	1.675	1.469	1.675	1.469	1.5502	52.4	18.21	1413.8	02.59
1.312	1.438	1.312	1.438	1.312	1.438	1.312	1.438	1.312	1.438	1.5743	52.4	18.36	1413.7	02.59
RUN NO.	28	CONFIG NO. 16												
1.971	1.925	1.971	1.925	1.971	1.925	1.971	1.925	1.971	1.925	1.5774	52.8	19.23	1411.6	02.59
1.797	1.691	1.797	1.691	1.797	1.691	1.797	1.691	1.797	1.691	1.5745	52.8	19.08	1414.1	02.59
1.010	1.990	1.010	1.990	1.010	1.990	1.010	1.990	1.010	1.990	1.5805	52.8	19.15	1415.8	02.59
1.221	1.432	1.221	1.432	1.221	1.432	1.221	1.432	1.221	1.432	1.5805	52.8	18.70	1417.7	02.59
1.544	1.308	1.544	1.308	1.544	1.308	1.544	1.308	1.544	1.308	1.5865	52.8	18.73	1418.0	02.59
1.691	1.308	1.691	1.308	1.691	1.308	1.691	1.308	1.691	1.308	1.5881	52.8	18.96	1418.1	02.59
1.675	1.469	1.675	1.469	1.675	1.469	1.675	1.469	1.675	1.469	1.5918	52.8	18.99	1418.0	02.59
1.312	1.438	1.312	1.438	1.312	1.438	1.312	1.438	1.312	1.438	1.6366	52.8	19.06	1418.6	02.59
RUN NO.	29	CONFIG NO. 17												
1.971	1.925	1.971	1.925	1.971	1.925	1.971	1.925	1.971	1.925	1.5529	52.9	18.52	1408.2	02.59
1.797	1.691	1.797	1.691	1.797	1.691	1.797	1.691	1.797	1.691	1.5566	52.9	18.66	1412.0	02.59
1.010	1.990	1.010	1.990	1.010	1.990	1.010	1.990	1.010	1.990	1.5503	52.9	18.58	1413.6	02.59
1.221	1.432	1.221	1.432	1.221	1.432	1.221	1.432	1.221	1.432	1.5556	52.9	18.48	1415.2	02.59
1.544	1.308	1.544	1.308	1.544	1.308	1.544	1.308	1.544	1.308	1.5502	52.9	18.63	1416.4	02.59
1.691	1.308	1.691	1.308	1.691	1.308	1.691	1.308	1.691	1.308	1.5635	52.9	18.52	1416.8	02.59
1.675	1.469	1.675	1.469	1.675	1.469	1.675	1.469	1.675	1.469	1.5639	52.9	18.57	1417.0	02.59
1.312	1.438	1.312	1.438	1.312	1.438	1.312	1.438	1.312	1.438	1.5783	52.9	18.53	1416.3	02.59
RUN NO.	30	CONFIG NO. 18												
1.971	1.925	1.971	1.925	1.971	1.925	1.971	1.925	1.971	1.925	1.5327	53.0	19.67	1410.9	02.72
1.797	1.691	1.797	1.691	1.797	1.691	1.797	1.691	1.797	1.691	1.5288	53.0	19.60	1413.5	02.73
1.010	1.990	1.010	1.990	1.010	1.990	1.010	1.990	1.010	1.990	1.5285	53.0	19.77	1415.4	02.75
1.221	1.432	1.221	1.432	1.221	1.432	1.221	1.432	1.221	1.432	1.5289	53.0	19.61	1416.8	02.73
1.544	1.308	1.544	1.308	1.544	1.308	1.544	1.308	1.544	1.308	1.5286	53.0	19.88	1417.7	02.76
1.691	1.308	1.691	1.308	1.691	1.308	1.691	1.308	1.691	1.308	1.5376	53.0	19.94	1418.2	02.73
1.675	1.469	1.675	1.469	1.675	1.469	1.675	1.469	1.675	1.469	1.5420	53.0	19.66	1418.6	02.73
1.312	1.438	1.312	1.438	1.312	1.438	1.312	1.438	1.312	1.438	1.5562	53.0	19.74	1418.2	02.63

ALPHA	BETA	CLS	CDS	CYS	CRLLS	CYAWS	CYS	Q	V	RN-TUN 10**6	PN0ZL	MASS FLOW	VJET	CMU
RUN NO.	31	CRNFIG NO.	19											
-3.28	00	544	016	215E	0021	0001	0001	30.9813	161.48	1.5160	54.8	1989	1426.1	0279
5.29	00	746	166	2641	0100	0017	0020	31.1551	162.07	1.5169	54.8	1992	1427.9	0278
9.43	00	544	100	2131	0016	0006	0059	31.0495	161.85	1.5131	54.8	2016	1428.3	0272
12.50	00	1.227	276	1156	0030	0012	0084	31.0631	161.95	1.5118	54.8	2010	1428.3	0273
13.58	00	1.476	272	1116	0006	0023	0111	30.9200	161.64	1.5069	54.8	2015	1428.1	0274
14.24	00	1.657	319	1127	0080	0028	0020	31.6934	163.73	1.5237	54.8	1995	1427.7	0269
RUN NO.	32	CRNFIG NO.	20											
-3.27	00	544	100	215E	0009	0015	0029	30.6304	161.34	1.4888	22.0	0768	835.2	0074
5.29	00	746	166	2641	0014	0012	0000	30.6032	161.35	1.4864	22.0	0762	835.6	0073
9.43	00	544	100	2131	0009	0008	0007	30.6236	161.47	1.4853	22.0	0776	835.9	0074
12.50	00	1.227	276	1156	0018	0015	0034	30.6678	161.69	1.4838	22.0	0761	836.2	0073
13.58	00	1.476	272	1116	0026	0012	0028	30.5712	161.51	1.4798	22.0	0755	836.4	0072
14.24	00	1.657	319	1127	0102	0078	0033	30.8416	162.34	1.4837	22.0	0755	836.5	0070
RUN NO.	33	CRNFIG NO.	20											
-3.26	00	544	100	215E	0009	0015	0025	32.0647	165.81	1.5062	22.0	0748	836.6	0070
5.29	00	746	166	2641	0014	0012	0000	30.6032	161.35	1.4864	22.0	0768	836.9	0071
9.43	00	544	100	2131	0009	0008	0007	30.6236	161.47	1.4853	22.0	1378	1244.1	0199
12.50	00	1.227	276	1156	0018	0015	0034	30.6678	161.69	1.4838	22.0	1385	1244.8	0172
13.58	00	1.476	272	1116	0026	0012	0028	30.5712	161.51	1.4798	22.0	1370	1244.9	0170
14.24	00	1.657	319	1127	0102	0078	0033	30.8416	162.34	1.4837	22.0	1379	1245.5	0171
RUN NO.	34	CRNFIG NO.	20											
-3.26	00	544	100	215E	0014	0012	0000	30.6032	161.35	1.4864	22.0	1364	1245.5	0199
5.29	00	746	166	2641	0009	0008	0007	30.6236	161.47	1.4853	22.0	1379	1245.5	0199
9.43	00	544	100	2131	0018	0015	0034	30.6678	161.69	1.4838	22.0	1364	1245.5	0199
12.50	00	1.227	276	1156	0026	0012	0028	30.5712	161.51	1.4798	22.0	1379	1245.5	0199
13.58	00	1.476	272	1116	0102	0078	0033	30.8416	162.34	1.4837	22.0	1374	1245.7	0195
14.24	00	1.657	319	1127	0102	0078	0033	30.8416	162.34	1.4837	22.0	1380	1245.8	0193
RUN NO.	35	CRNFIG NO.	20											
-3.26	00	544	100	215E	0014	0012	0000	30.6032	161.35	1.4864	22.0	2348	1507.1	0349
5.29	00	746	166	2641	0009	0008	0007	30.6236	161.47	1.4853	22.0	2326	1508.2	0345
9.43	00	544	100	2131	0018	0015	0034	30.6678	161.69	1.4838	22.0	2323	1508.8	0348
12.50	00	1.227	276	1156	0026	0012	0028	30.5712	161.51	1.4798	22.0	2356	1509.1	0340
13.58	00	1.476	272	1116	0102	0078	0033	30.8416	162.34	1.4837	22.0	2340	1509.2	0340
14.24	00	1.657	319	1127	0102	0078	0033	30.8416	162.34	1.4837	22.0	2340	1509.1	0347
RUN NO.	36	CRNFIG NO.	20											
-3.26	00	544	100	215E	0014	0012	0000	30.6032	161.35	1.4864	22.0	2355	1509.0	0342
5.29	00	746	166	2641	0009	0008	0007	30.6236	161.47	1.4853	22.0	2331	1509.9	0345
9.43	00	544	100	2131	0018	0015	0034	30.6678	161.69	1.4838	22.0	2331	1509.9	0345
12.50	00	1.227	276	1156	0026	0012	0028	30.5712	161.51	1.4798	22.0	2331	1509.9	0345
13.58	00	1.476	272	1116	0102	0078	0033	30.8416	162.34	1.4837	22.0	2331	1509.9	0345
14.24	00	1.657	319	1127	0102	0078	0033	30.8416	162.34	1.4837	22.0	2331	1509.9	0345

ALPHA	BETA	CLS	CDS	CMS	CRLLS	CYAKS	CYS	Q	V	RN-TUN 10+6	PNZL	FLBW	VJET	CMU
RUN NO.		CANFIG NO.	23											
1.00	35	1.0316	.1975	-.2477	.0026	.0009	-.0092	31.112	161.91	1.5204	21.8	.0738	827.6	.00.0
-3.30	39	.7299	.1635	-.2727	.0014	.0028	-.0226	31.4617	162.78	1.5297	21.8	.0733	827.7	.00.0
5.25	39	1.0246	.1948	-.2450	.0027	.0001	-.0060	31.4106	162.70	1.5272	21.8	.0744	827.8	.00.0
9.52	39	1.0295	.2370	-.2100	.0028	-.0017	-.0004	31.6491	163.39	1.5311	21.8	.0751	827.7	.00.0
12.28	39	1.0309	.2027	-.1774	.0042	-.0009	-.0011	31.9353	164.14	1.5377	21.8	.0773	827.6	.00.0
13.26	39	1.0300	.3054	-.1810	.0625	.0009	-.0572	33.3047	167.76	1.5672	21.8	.0744	827.6	.00.0
14.19	39	1.0361	.4349	-.1759	.0690	.0032	-.0694	33.3330	167.96	1.5689	21.8	.0749	827.6	.00.0
RUN NO.	40	1.0361	.4349	-.1759	.0575	-.0090	-.0521	33.5091	168.29	1.5715	21.8	.0759	827.6	.00.0
1.05	40	1.0312	.2101	-.2640	.0034	.0021	-.0125	30.8042	161.13	1.5120	38.4	.132	124.3	.0170
-3.24	40	.7840	.1732	-.2923	.0021	.0009	-.0077	30.7087	160.93	1.5086	38.4	.134	124.3	.0170
5.35	40	1.0330	.2119	-.2665	.0037	.0030	-.0164	30.8143	161.25	1.5100	38.4	.133	124.3	.0170
9.62	40	1.0334	.2629	-.2354	.0035	.0020	-.0148	30.7326	161.10	1.5067	38.4	.136	124.3	.0170
12.37	40	1.0318	.3229	-.2057	.0056	.0024	-.0166	30.8280	161.40	1.5076	38.4	.135	124.3	.0170
13.37	40	1.0343	.4145	-.1984	.0676	.0128	-.0098	31.6900	163.78	1.5253	38.4	.130	124.3	.0170
14.28	40	1.0322	.4257	-.1987	.0721	.0111	-.0389	31.6593	163.75	1.5235	38.4	.138	124.3	.0170
RUN NO.	41	1.0346	.4682	-.1943	.0651	-.0061	-.0054	32.0886	164.90	1.5326	38.4	.134	124.3	.0170
1.06	41	1.0255	.2144	-.2693	.0035	.0009	-.0137	30.6781	161.16	1.5003	52.6	.183	140.1	.02.9
-3.23	41	.7963	.1777	-.2983	.0027	.0000	-.0124	30.8302	161.85	1.5058	52.6	.187	140.1	.02.9
5.36	41	1.035	.2155	-.2694	.0024	.0019	-.0024	30.8110	161.62	1.5011	52.6	.184	140.1	.02.9
9.64	41	1.035	.2660	-.2384	.0029	.0013	-.0107	30.6781	161.35	1.4989	52.6	.182	140.1	.02.9
12.39	41	1.0399	.3280	-.2093	.0049	.0025	-.0110	30.7769	161.68	1.4986	52.6	.182	140.1	.02.9
13.39	41	1.0399	.4159	-.1950	.0744	.0121	-.0846	31.5605	163.84	1.5129	52.6	.185	140.1	.02.9
14.29	41	1.0362	.4357	-.2040	.0704	.0107	-.0752	31.8565	164.68	1.5183	52.6	.188	140.1	.02.9
RUN NO.	42	1.0301	.4752	-.1991	.0591	-.0049	-.0396	31.9182	164.94	1.5173	52.6	.189	140.1	.02.9
1.07	42	1.045	.2147	-.2691	.0035	.0008	-.0069	30.7735	161.81	1.4933	66.9	.231	150.6	.03.9
-3.23	42	.7993	.1784	-.2985	.0022	.0003	-.0083	30.7803	161.86	1.4928	66.9	.231	150.6	.03.9
5.35	42	1.041	.2156	-.2700	.0032	.0011	-.0188	30.9063	162.36	1.4940	66.9	.233	150.6	.03.9
9.63	42	1.042	.2656	-.2380	.0038	.0015	-.0155	30.7053	161.78	1.4882	66.9	.237	150.6	.03.9
12.42	42	1.0401	.3312	-.2125	.0050	.0012	-.0104	30.9677	162.52	1.4932	66.9	.231	150.6	.03.9
13.42	42	1.0487	.4578	-.2264	.0136	.0121	-.0086	31.4385	163.80	1.4925	66.9	.237	150.6	.03.9
14.52	42	1.0706	.4830	-.2540	.0351	.0124	-.0487	31.4385	163.84	1.5001	66.9	.238	150.6	.03.9
		1.5732	.5457	-.2511	.0113	-.0074	-.0060	31.8433	165.06	1.5084	66.9	.237	150.6	.03.9

ALPHA	BETA	CLS	CDS	CMS	CRCLS	CYAWS	CYS	Q	V	RN-TUN 1006	PRZL	MASS FLOW	VJET	CMU
RUN NO.		CONF IG NO.												
95	43	CONF IG NO.	23											
-3.23	06	1942		2344	0026	0022	0098	20.6441	132.75	1.2172	14.7	0013	0	0000
96	06	1615		2627	0020	0013	0087	20.6240	132.70	1.2168	14.7	0000	0	0000
96	06	1924		2354	0030	0010	0108	20.5434	132.47	1.2139	14.7	0008	0	0000
5.23	10	2360		1995	0038	0003	0133	20.5266	132.42	1.2133	14.7	0000	0	0000
9.49	09	15471		1651	0048	0007	0020	20.5602	132.56	1.2136	14.7	0013	0	0000
12.29	08	13374		1781	0657	0063	0735	21.2370	134.95	1.2343	14.7	0000	0	0000
13.15	08	11876		1637	0455	0092	0402	21.3887	135.25	1.2367	14.7	0039	0	0000
14.09	08	11283		1603	0319	0135	0163	21.6542	136.08	1.2445	14.7	0024	0	0000
RUN NO.		CONF IG NO.	23											
1.07	06	11566		2722	0011	0010	0028	20.6005	132.60	1.2164	74.4	2622	1545.1	0509
-3.23	04	17999		3001	0021	0010	0050	20.5434	132.40	1.2152	74.4	2651	1545.8	0608
1.07	06	11101		2722	0018	0025	0120	20.4561	132.15	1.2118	74.4	2659	1546.6	0612
9.36	06	14130		2712	0016	0013	0076	20.5131	132.35	1.2132	74.4	2665	1546.6	0613
9.66	06	17173		2560	0023	0025	0148	20.5332	132.61	1.2154	74.4	2642	1546.8	0615
12.49	07	15414		3072	0523	0118	0451	21.1608	134.48	1.2309	74.4	2673	1546.7	0505
13.44	06	14974		3204	0608	0052	0523	21.2513	134.79	1.2331	74.4	2677	1546.6	0503
14.36	07	14090		3310	0510	0093	0370	21.6035	136.20	1.2453	74.4	2704	1546.4	0507
RUN NO.		CONF IG NO.	23											
95	45	CONF IG NO.	23											
-3.35	03	5837		2304	0029	0023	0125	42.0484	185.55	1.8287	14.7	0000	0	0000
2.4	04	6767		2566	0022	0016	0106	41.9556	185.46	1.8239	14.7	0000	0	0000
5.22	04	9741		2298	0029	0022	0147	42.1010	185.87	1.8247	14.7	0000	0	0000
9.49	05	12632		1976	0027	0005	0074	41.8356	185.40	1.8159	14.7	0000	0	0000
11.60	05	15399		1640	0040	0005	0065	41.9289	185.91	1.8158	14.7	0000	0	0000
12.43	05	16412		1462	0061	0024	0076	42.2260	186.51	1.8183	14.7	0000	0	0000
13.43	05	14906		1709	0379	0073	0615	43.0535	188.59	1.8295	14.7	0000	0	0000
RUN NO.		CONF IG NO.	23											
1.05	46	CONF IG NO.	23											
-3.25	00	10446		2645	0024	0015	0043	41.4988	185.21	1.7948	52.8	1946	1395.5	0139
5.33	00	7747		2918	0019	0011	0053	41.6416	185.64	1.7951	52.8	1896	1396.0	0134
9.61	00	10446		2654	0024	0015	0121	41.6315	185.75	1.7915	52.8	1905	1396.2	0135
11.73	00	15782		2338	0030	0017	0147	41.7845	186.19	1.7926	52.8	1910	1396.4	0134
12.70	00	16688		2065	0040	0015	0076	41.7948	186.31	1.7902	52.8	1904	1396.6	0136
13.43	00	17816		1869	0077	0046	0131	41.9955	186.85	1.7923	52.8	1931	1396.6	0130
13.43	00	17658		1652	0155	0100	0135	42.2642	187.55	1.7956	52.8	1883	1396.6	0130
13.43	00	14795		1988	0522	0130	0504	43.0807	189.77	1.8025	52.8	1921	1396.8	0130

ALPHA	BETA	CLS	CDS	CMS	CRLLS	CYAKS	CYS	G	V	RN-TUN. 10**6	PNØZL	MASS FLOW	VJET	CJ
CONFIG NR. 23														
1.06	.02	1.0975	2132	-2688	.0028	.0007	-.0168	30.9472	160.70	1.5319	52.7	.1873	1396.2	.0238
-3.24	.02	1.7461	1785	-2954	.0023	.0000	-.0133	31.0086	160.91	1.5323	52.7	.1882	1396.6	.0238
1.06	.01	1.0951	2128	-2683	.0027	.0023	-.0066	31.1346	161.29	1.5339	52.7	.1863	1396.8	.0238
5.34	.00	1.5331	2024	-2367	.0019	.0008	-.0049	31.0461	161.14	1.5298	52.7	.1890	1396.7	.0238
9.62	.00	1.6795	3341	-2083	.0049	.0017	-.0081	31.3269	161.90	1.5360	52.7	.1888	1396.8	.0238
10.69	.00	1.7332	3443	-2006	.0059	.0035	-.0170	31.1108	161.38	1.5298	52.7	.1877	1396.7	.0238
11.74	.00	1.8236	3416	-1902	.0077	.0046	-.0079	31.2198	161.70	1.5315	52.7	.1915	1396.8	.0238
12.73	.00	1.9260	3387	-1739	.0172	.0114	-.0093	31.5128	162.53	1.5370	52.7	.1903	1396.8	.0238
13.58	.02	1.9407	4182	-1955	.0389	.0134	-.0017	31.9586	163.74	1.5461	52.7	.1946	1396.8	.0238
CONFIG NR. 24														
1.06	.00	1.0975	2119	-2665	.0029	.0010	-.0085	30.9780	161.23	1.5218	53.2	.1851	1400.5	.0238
-3.24	.01	1.7461	1783	-2943	.0020	-.0004	-.0001	31.2607	161.99	1.5281	53.2	.1872	1400.8	.0238
1.06	.00	1.0956	2130	-2683	.0029	.0012	-.0101	31.1346	161.73	1.5234	53.2	.1836	1400.9	.0238
5.34	.00	1.5331	2030	-2380	.0032	.0020	-.0106	31.1857	161.92	1.5233	53.2	.1848	1401.0	.0238
9.62	.00	1.6795	3367	-2092	.0050	.0016	-.0075	31.4004	162.50	1.5278	53.2	.1862	1401.1	.0238
10.70	.00	1.7332	3455	-2002	.0058	.0022	-.0155	31.5265	162.87	1.5299	53.2	.1882	1401.2	.0238
11.74	.00	1.8236	3441	-1922	.0075	.0029	-.0123	31.2130	162.09	1.5299	53.2	.1846	1401.3	.0238
12.74	.00	1.9260	3386	-1686	.0084	.0120	-.0097	31.5844	163.11	1.5292	53.2	.1822	1401.4	.0238
13.55	.00	1.9407	4511	-2098	.0402	.0152	-.0036	32.0477	164.38	1.5385	53.2	.1831	1401.4	.0238
CONFIG NR. 25														
1.06	.00	1.0975	2126	-2624	.0025	.0014	-.0085	31.1756	162.01	1.5198	52.5	.1899	1393.6	.0238
-3.25	.00	1.7465	1748	-2898	.0020	.0004	-.0073	31.0703	161.86	1.5161	52.5	.1909	1394.0	.0238
1.06	.00	1.0956	2132	-2610	.0027	.0012	-.0100	31.2341	162.26	1.5188	52.5	.1939	1394.2	.0238
5.34	.00	1.5340	2027	-2314	.0022	.0007	-.0019	30.9677	161.67	1.5100	52.5	.1948	1394.6	.0238
9.62	.00	1.6769	3340	-2012	.0042	.0013	-.0077	31.2743	162.51	1.5163	52.5	.1920	1394.8	.0238
10.69	.00	1.7386	3437	-1945	.0056	.0006	-.0007	31.1687	162.27	1.5130	52.5	.1915	1394.9	.0238
11.73	.00	1.7951	3709	-1936	.0049	.0024	-.0059	31.0155	161.96	1.5071	52.5	.1909	1395.1	.0238
12.74	.00	1.8071	4249	-1938	.0156	.0111	-.0187	31.4754	163.22	1.5168	52.5	.1944	1395.3	.0238
13.37	.00	1.9463	4586	-2260	.0668	.0098	-.0069	32.1942	165.20	1.5310	52.5	.1944	1395.3	.0238
CONFIG NR. 26														
1.06	.00	1.0975	2101	-2886	.0016	.0011	-.0023	30.9916	162.19	1.5011	52.6	.1928	1397.2	.0238
-3.26	.00	1.7471	1732	-2580	.0030	.0011	-.0124	31.0358	162.36	1.5010	52.6	.1927	1397.5	.0238
1.06	.00	1.0959	2086	-2279	.0032	.0004	-.0112	31.0836	162.56	1.5003	52.6	.1912	1398.0	.0238
5.33	.00	1.3599	3286	-2025	.0043	-.0004	-.0002	31.0461	162.48	1.4991	52.6	.1921	1398.1	.0238
9.61	.01	1.6698	3358	-2044	.0032	.0008	-.0097	31.1040	162.67	1.4995	52.6	.1937	1398.3	.0238
10.68	.00	1.7471	3567	-2044	.0032	.0008	-.0097	31.1040	162.67	1.4995	52.6	.1937	1398.3	.0238
11.74	.00	1.7985	3897	-2097	.0050	.0026	-.0067	30.9438	162.28	1.4949	52.6	.1942	1398.4	.0238
12.74	.00	1.8025	4409	-2105	.0105	.0113	-.0160	31.2675	163.16	1.5000	52.6	.1941	1398.4	.0238
13.37	.00	1.9425	4710	-2372	.0684	.0035	-.0029	32.2453	165.79	1.5230	52.6	.1932	1398.5	.0238

ALPHA	BETA	CLS	CDS	CMS	CRLLS	CYAMS	CYS	Q	V	RN-TUN 10+6	PNZL	MASS FLW	VJET	CPU
RUN NO.	51	CONFIG N9. 27												
1.00	CC	1.0320	.2024	..2460	.0011	.0007	.0007	31.1312	162.87	1.4976	52.6	.1925	1397.8	.0244
3.23	CC	1.7772	.1691	..2754	.0008	.0000	.0000	31.1756	163.05	1.4970	52.6	.1938	1398.1	.0245
5.28	CC	1.0363	.2039	..2447	.0018	.0001	.0001	31.2130	162.97	1.4928	52.6	.1933	1398.7	.0245
9.64	CC	1.0310	.2485	..2133	.0018	.0001	.0001	31.1000	162.97	1.4928	52.6	.1933	1398.7	.0245
10.64	CC	1.0364	.3112	..1842	.0031	.0003	.0003	30.8007	162.37	1.4810	52.6	.1954	1399.1	.0270
11.70	CC	1.7008	.3299	..1780	.0042	.0003	.0003	31.0831	163.10	1.4864	52.6	.1949	1399.2	.0270
12.72	CC	1.7604	.3476	..1688	.0056	.0014	.0014	31.0836	163.19	1.4861	52.6	.1948	1399.3	.0267
13.35	CC	1.7824	.3984	..1744	.0121	.0104	.0104	31.1517	163.47	1.4854	52.6	.1948	1399.4	.0266
RUN NO.	52	CONFIG N9. 28												
1.05	CC	1.0313	.2106	..2671	.0029	.0000	.0000	31.0120	163.38	1.4734	53.3	.1879	1406.0	.0290
3.24	CC	1.7853	.1762	..2961	.0022	.0002	.0002	30.8826	163.16	1.4734	53.3	.1871	1406.7	.0290
5.35	CC	1.0362	.2114	..2673	.0027	.0000	.0000	30.8688	163.16	1.4723	53.3	.1867	1407.3	.0290
9.64	CC	1.4025	.2639	..2347	.0030	.0005	.0011	31.4447	164.70	1.4854	53.3	.1868	1407.6	.0290
10.70	CC	1.6982	.3417	..2211	.0025	.0006	.0012	30.9711	163.52	1.4726	53.3	.1875	1408.0	.0290
11.76	CC	1.7650	.3459	..1997	.0049	.0003	.0005	31.0216	163.97	1.4749	53.3	.1869	1408.8	.0293
12.42	CC	1.8188	.3663	..1908	.0077	.0012	.0027	31.0358	163.75	1.4730	53.3	.1876	1409.0	.0290
13.44	CC	1.4743	.4204	..2000	.0511	.0126	.1007	31.5844	165.33	1.4826	53.3	.1887	1409.3	.0297
RUN NO.	53	CONFIG N9. 29												
1.07	CC	1.1137	.2194	..2722	.0027	.0004	.0004	30.9030	163.40	1.4729	74.4	.2660	1544.9	.046
3.23	CC	1.8018	.1789	..3013	.0021	.0000	.0000	30.9541	163.59	1.4729	74.4	.2674	1548.0	.047
5.37	CC	1.1102	.2161	..2724	.0025	.0009	.0009	30.9336	163.59	1.4709	74.4	.2648	1548.8	.047
9.65	CC	1.4202	.2681	..2425	.0029	.0000	.0011	30.8518	163.50	1.4661	74.4	.2667	1549.4	.047
10.72	CC	1.7086	.3308	..2128	.0051	.0014	.0164	30.9813	163.90	1.4681	74.4	.2672	1549.4	.047
11.78	CC	1.7850	.3535	..2046	.0056	.0011	.0045	30.9677	163.95	1.4657	74.4	.2675	1549.4	.047
12.63	CC	1.8414	.3715	..1966	.0065	.0031	.0143	30.7709	163.49	1.4602	74.4	.2672	1549.2	.0410
13.59	CC	1.6925	.4618	..2428	.0265	.0005	.0380	31.2465	164.85	1.4685	74.4	.2679	1549.0	.044
RUN NO.	54	CONFIG N9. 29												
1.07	CC	1.6455	.4996	..2534	.0396	.0134	.0506	31.4447	165.44	1.4717	74.4	.2688	1548.8	.0403
5.36	CC	1.1089	.2160	..2716	.0025	.0009	.0057	30.8621	163.84	1.4600	74.3	.2679	1547.5	.0409
9.64	CC	1.4123	.2683	..2414	.0028	.0001	.0043	30.9336	164.16	1.4589	74.3	.2667	1547.6	.0406
10.71	CC	1.6996	.3310	..2112	.0050	.0003	.0104	31.0733	164.60	1.4606	74.3	.2664	1547.5	.0404
11.77	CC	1.7727	.3493	..2031	.0055	.0003	.0052	30.9234	164.28	1.4553	74.3	.2679	1547.2	.0408
12.72	CC	1.8344	.3676	..1941	.0071	.0019	.0089	30.7223	163.81	1.4490	74.3	.2687	1547.1	.0412
13.50	CC	1.7797	.4060	..1779	.0152	.0006	.0206	30.7939	164.12	1.4482	74.3	.2676	1546.7	.0410
		1.5493	.4408	..2051	.0559	.0117	.0985	31.7172	166.65	1.4676	74.3	.2687	1546.6	.0400

ALPHA	BETA	CLS	CDS	CMS	CRLLS	CYAMS	CYS	Q	V	RN-TUN 10.06	PN02L	MASS FLOW	VJET	CMU
RUN No. 30	55	CONFIG No. 30	1.482	1.209	.0001	.0035	-.0158	31.0155	164.12	1.4673	14.6	.0065	.0	.0000
5.15	.00	1.491	1.025	-.1881	.0016	.0009	-.0087	30.8280	163.67	1.4618	14.6	.0091	.0	.0000
9.43	.00	1.477	1.444	-.1567	.0023	-.0006	-.0048	30.6641	163.27	1.4571	14.6	.0024	.0	.0000
10.60	.00	1.554	1.630	-.1480	.0037	-.0008	-.0023	31.0017	164.24	1.4635	14.6	.0013	.0	.0000
11.27	.00	1.624	1.305	-.1419	.0050	.0001	-.0051	30.5827	163.18	1.4523	14.6	.0078	.0	.0000
12.63	.00	1.612	1.328	-.1386	.0090	.0086	-.0035	30.5575	164.22	1.4603	14.6	.0039	.0	.0000
13.40	.00	1.515	1.382	-.1543	.0327	-.0147	.0817	31.2232	164.99	1.4649	14.6	.0013	.0	.0000
13.45	.00	1.572	1.123	-.1274	-.0006	.0034	-.0171	30.7168	163.72	1.4514	14.6	.0000	.0	.0000
RUN No. 30	56	CONFIG No. 30	1.517	1.232	.0016	-.0007	-.0062	30.7633	163.69	1.4570	38.1	.1395	1241.6	.0172
5.19	.00	1.414	1.192	-.2021	.0020	.0019	.0045	30.6611	163.51	1.4527	38.1	.1395	1241.7	.0172
9.47	.00	1.518	1.550	-.1732	.0035	-.0019	.0047	30.5758	163.32	1.4497	38.1	.1406	1241.9	.0174
10.64	.00	1.577	1.231	-.1642	.0040	-.0011	.0073	30.6372	163.50	1.4509	38.1	.1393	1241.8	.0172
11.61	.01	1.685	1.215	-.1581	.0052	-.0014	.0049	30.8042	163.95	1.4546	38.1	.1404	1241.9	.0173
12.66	.01	1.727	1.332	-.1526	.0090	.0068	.0032	30.9336	164.33	1.4568	38.1	.1389	1241.9	.0170
13.54	.00	1.536	1.375	-.1498	-.0161	.0110	.0271	31.2743	165.26	1.4642	38.1	.1395	1241.9	.0169
13.85	.00	1.521	1.539	-.2337	.0014	-.0008	.0057	30.4940	163.26	1.4441	38.1	.1396	1242.1	.0173
13.93	.00	1.555	1.124	-.1297	.0012	.0002	-.0027	30.5452	163.43	1.4446	38.1	.1394	1242.2	.0173
RUN No. 30	57	CONFIG No. 30	1.562	1.238	.0016	-.0009	-.0081	30.8791	164.03	1.4595	52.3	.1918	1402.7	.0265
5.18	.01	1.391	1.072	-.2052	.0021	.0025	.0029	30.6951	163.59	1.4539	52.3	.1935	1403.0	.0269
9.47	.02	1.538	1.558	-.1761	.0028	-.0023	.0070	30.9950	164.42	1.4604	52.3	.1948	1403.1	.0258
10.65	.00	1.639	1.278	-.1680	.0043	-.0019	.0018	30.7757	163.83	1.4552	52.3	.1931	1403.3	.0268
11.61	.01	1.678	1.226	-.1635	.0050	-.0010	.0048	30.9063	164.20	1.4578	52.3	.1950	1403.4	.0270
12.67	.00	1.728	1.344	-.1558	.0096	.0063	.0037	31.0203	164.74	1.4612	52.3	.1915	1403.4	.0274
13.55	.00	1.617	1.365	-.1494	-.0121	.0090	.0265	31.4140	165.63	1.4679	52.3	.1928	1403.6	.0263
13.89	.01	1.572	1.519	-.2343	.0011	-.0002	.0041	30.6644	163.74	1.4481	52.3	.1919	1403.7	.0267
13.93	.02	1.554	1.220	-.1267	.0008	.0005	.0036	30.8376	164.24	1.4513	52.3	.1911	1403.8	.0265
RUN No. 30	58	CONFIG No. 30	1.510	1.251	.0015	-.0003	-.0029	30.6917	163.61	1.4541	74.0	.2676	1547.8	.0411
5.19	.02	1.472	1.097	-.2063	.0022	.0032	.0084	30.9336	164.30	1.4587	74.0	.2662	1548.2	.0416
9.48	.00	1.539	1.584	-.1805	.0036	-.0021	.0060	30.9063	164.28	1.4569	74.0	.2665	1548.4	.0407
10.66	.00	1.628	1.277	-.1722	.0044	-.0014	.0022	30.8416	164.11	1.4553	74.0	.2685	1548.3	.0411
11.62	.01	1.655	1.253	-.1667	.0052	-.0007	.0020	30.7906	164.01	1.4534	74.0	.2661	1548.3	.0408
12.67	.02	1.737	1.391	-.1566	.0104	.0054	.0095	31.1312	164.92	1.4611	74.0	.2668	1548.3	.0404
13.68	.06	1.760	1.324	-.1552	.0092	.0054	.0089	31.3357	165.50	1.4650	74.0	.2662	1548.1	.0411
14.31	.01	1.546	1.400	-.1853	.0507	-.0008	.0283	32.2623	168.06	1.4837	74.0	.2642	1547.7	.0386
14.89	.03	1.583	1.545	-.2378	.0016	.0001	.0034	30.7497	164.05	1.4489	74.0	.2671	1547.3	.0409
14.93	.01	1.539	1.235	-.1260	.0002	.0056	-.0253	30.8840	164.44	1.4514	74.0	.2685	1547.3	.0410

ALPHA	BETA	CLS	COS	CUS	CRLLS	CYAWS	CYS	Q	V	RM-TUN 10.6	PN0ZL	MASS FLOW	VJET	CMU
RUN NO.	59	CAFIG NO.	31											
1.03	.00	1.069	.279	-.2421	.0045	.0002	-.0074	30.8451	159.10	1.5739	14.6	.0223	.0	.0000
5.33	.00	1.3762	.280	-.2116	.0063	-.0011	-.0068	31.1448	159.93	1.5802	14.6	.0221	.0	.0000
9.59	.00	1.6504	.319	-.1779	.0076	-.0014	-.0009	31.0700	159.80	1.5765	14.6	.0227	.0	.0000
10.55	.00	1.7148	.374	-.1704	.0077	-.0007	-.0004	31.0049	159.67	1.5739	14.6	.0233	.0	.0000
11.69	.00	1.7535	.313	-.1603	.0116	.0020	-.0089	31.0461	159.82	1.5738	14.6	.0248	.0	.0000
12.37	.00	1.7418	.393	-.207	.0734	.0016	-.0261	32.3615	163.31	1.6034	14.6	.0223	.0	.0000
13.37	.00	1.7424	.4687	-.2220	.0790	.0004	-.0640	32.2809	163.14	1.6004	14.6	.0245	.0	.0000
1.03	.00	1.0708	.297	-.2409	.0047	-.0005	-.0104	31.1176	160.18	1.5712	14.6	.0258	.0	.0000
3.06	.00	1.7667	.201	-.2656	.0043	-.0009	-.0116	30.9770	159.82	1.5678	14.6	.0255	.0	.0000
RUN NO.	60	CAFIG NO.	31											
1.15	.00	1.1941	.2597	-.2790	.0069	-.0055	.0048	30.8513	159.71	1.5591	38.4	.1483	1240.7	.0181
5.44	.00	1.1949	.357	-.2178	.0065	-.0048	.0140	30.9166	159.96	1.5586	38.4	.1478	1242.5	.0181
9.70	.00	1.7610	.373	-.2146	.0077	-.0036	.0096	31.1312	160.55	1.5632	38.4	.1470	1243.5	.0179
10.66	.00	1.8240	.374	-.2077	.0084	-.0014	-.0004	31.0801	160.43	1.5617	38.4	.1482	1243.9	.0180
11.99	.00	1.8571	.464	-.2369	.0121	.0026	-.0074	31.0733	160.45	1.5606	38.4	.1496	1244.3	.0182
12.38	.00	1.7428	.4044	-.2122	.0768	.0075	-.0745	32.2317	163.58	1.5851	38.4	.1478	1245.0	.0174
13.00	.00	1.7448	.4758	-.2103	.0809	.0064	-.0233	32.0796	163.24	1.5804	38.4	.1488	1245.4	.0176
1.14	.00	1.1193	.2619	-.2794	.0062	-.0060	.0153	31.0155	160.46	1.5550	38.4	.1487	1246.1	.0182
3.14	.00	1.8112	.245	-.3083	.0044	-.0045	.0135	30.9200	160.24	1.5519	38.4	.1485	1246.3	.0182
RUN NO.	61	CAFIG NO.	31											
1.18	.00	1.2855	.2702	-.2850	.0061	-.0055	.0079	31.0256	160.51	1.5556	52.6	.1959	1406.8	.0271
5.46	.00	1.5159	.3221	-.2538	.0063	-.0035	.0023	30.7292	159.83	1.5460	52.6	.1959	1406.5	.0273
9.73	.00	1.7712	.377	-.2247	.0067	-.0028	.0055	30.8382	160.15	1.5478	52.6	.1957	1406.5	.0272
10.79	.00	1.8336	.4038	-.2155	.0071	-.0013	-.0072	30.8791	160.29	1.5478	52.6	.1961	1406.5	.0272
11.82	.00	1.8891	.4540	-.2021	.0098	.0030	.0028	30.9405	160.47	1.5489	52.6	.1975	1406.5	.0274
12.67	.00	1.7727	.4719	-.2067	.0329	.0041	-.0526	31.6457	162.37	1.5646	52.6	.1965	1406.5	.0266
13.65	.00	1.7569	.4839	-.2040	.0359	.0041	-.0688	31.7049	162.58	1.5646	52.6	.1958	1406.4	.0255
1.18	.00	1.2866	.2702	-.2860	.0058	-.0058	.0159	30.7258	160.67	1.5397	52.6	.1955	1406.2	.0273
3.12	.00	1.5116	.298	-.3164	.0045	-.0048	.0042	30.9302	160.62	1.5443	52.6	.1959	1406.0	.0271
RUN NO.	62	CAFIG NO.	31											
1.19	.00	1.2322	.2731	-.2879	.0044	-.0046	.0194	30.6849	159.96	1.5387	68.6	.2827	1517.7	.0426
5.48	.00	1.5371	.3300	-.2582	.0056	-.0028	.0047	30.8076	160.32	1.5407	68.6	.2840	1517.3	.0426
9.76	.00	1.8326	.3046	-.2290	.0071	-.0017	.0019	31.2062	161.39	1.5500	68.6	.2817	1517.0	.0418
10.83	.00	1.9177	.4150	-.2227	.0077	-.0004	-.0026	31.0495	161.03	1.5448	68.6	.2771	1516.6	.0413
11.87	.00	1.9478	.4369	-.2122	.0110	.0028	-.0124	30.7531	160.27	1.5372	68.6	.2780	1516.3	.0418
12.51	.00	1.9443	.4826	-.2240	.0682	.0075	-.0885	31.9863	163.65	1.5628	68.6	.2758	1515.9	.0398
13.45	.00	1.9900	.4263	-.2231	.0801	.0051	-.0822	32.1075	164.06	1.5634	68.6	.2774	1515.3	.0399
1.19	.00	1.2882	.2716	-.2897	.0052	-.0045	.0073	30.7223	160.43	1.5306	68.6	.2809	1514.3	.0422
3.10	.00	1.5544	.2378	-.3225	.0039	-.0038	.0052	30.7664	160.57	1.5310	68.6	.2851	1513.8	.0427

ALPHA	BETA	CLS	CDS	CMS	CRCLS	CYAWS	CYS	G	V	RN-TUN 10+6	PNQZL	MASS FLOW	VJET	CMU
RUN NO.		CONFIG NO.		35										
81	.81	.9213	.1921	-.0781	.0033	-.0009	-.0031	30.8791	161.47	1.5192	1+6	.0000	.0	.0000
82	.82	.9213	.272	-.1165	.0039	-.0015	-.0026	30.8655	161.44	1.5188	1+6	.0000	.0	.0000
83	.83	.9213	.272	-.1165	.0039	-.0015	-.0026	30.8655	161.44	1.5188	1+6	.0000	.0	.0000
84	.84	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
85	.85	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
86	.86	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
87	.87	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
88	.88	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
89	.89	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
90	.90	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
91	.91	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
92	.92	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
93	.93	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
94	.94	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
95	.95	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
96	.96	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
97	.97	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
98	.98	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
99	.99	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
100	1.00	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
101	1.01	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
102	1.02	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
103	1.03	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
104	1.04	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
105	1.05	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
106	1.06	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
107	1.07	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
108	1.08	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
109	1.09	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
110	1.10	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
111	1.11	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
112	1.12	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
113	1.13	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
114	1.14	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
115	1.15	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
116	1.16	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
117	1.17	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
118	1.18	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
119	1.19	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
120	1.20	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
121	1.21	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
122	1.22	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
123	1.23	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
124	1.24	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
125	1.25	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
126	1.26	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
127	1.27	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
128	1.28	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
129	1.29	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
130	1.30	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
131	1.31	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
132	1.32	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
133	1.33	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
134	1.34	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
135	1.35	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
136	1.36	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
137	1.37	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
138	1.38	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
139	1.39	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
140	1.40	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
141	1.41	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
142	1.42	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
143	1.43	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
144	1.44	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
145	1.45	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
146	1.46	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
147	1.47	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
148	1.48	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
149	1.49	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
150	1.50	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
151	1.51	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
152	1.52	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
153	1.53	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
154	1.54	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
155	1.55	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
156	1.56	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
157	1.57	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
158	1.58	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
159	1.59	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
160	1.60	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
161	1.61	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
162	1.62	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
163	1.63	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
164	1.64	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
165	1.65	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37	1.5237	1+6	.0000	.0	.0000
166	1.66	.9213	.343	-.1627	.0051	-.0009	-.0016	31.1790	162.37					

ALPHA	BETA	CLS	CDS	CMS	CRLLS	CYANG	CYS	Q	V	IC006	PN0ZL	FL0R	VJET	CMU
RUN N0.	35	CONF IG N0.	36											
5.17	00	1.854	1942	0721	0026	0003	0006	30.8159	162.44	1.4908	14.6	0000	0	0000
9.48	00	1.2168	2363	1093	0036	0007	0008	31.0392	163.04	1.4957	14.6	0013	0	0000
10.55	00	1.5293	2922	1484	0039	0016	0002	31.0568	163.46	1.4975	14.6	0117	0	0000
11.61	00	1.6105	3105	1569	0041	0012	0042	31.0528	163.14	1.4946	14.6	0052	0	0000
12.32	00	1.6735	3309	1645	0060	0004	0033	31.0188	163.08	1.4979	14.6	0013	0	0000
13.27	00	1.9460	3904	1762	0095	0032	0423	31.7913	165.11	1.5079	14.6	0078	0	0000
14.24	00	1.3192	4001	1694	0483	0032	0605	31.9808	165.77	1.5126	14.6	0013	0	0000
15.21	00	1.9839	1043	0731	0024	0006	0053	30.9443	163.06	1.4800	14.6	0000	0	0000
16.18	00	1.3183	1643	0284	0022	0013	0015	31.0441	163.36	1.4889	14.6	0012	0	0000
RUN N0.	36	CONF IG N0.	37											
5.27	00	1.5820	2100	0711	0024	0030	0038	30.8936	163.00	1.4888	52.4	1477	1403.4	02.5
9.59	00	1.3191	2394	1058	0030	0009	0025	30.8688	163.03	1.4815	52.4	1478	1404.0	02.5
10.67	00	1.6471	3257	1409	0040	0003	0021	30.9325	163.54	1.4886	52.4	1479	1404.1	02.5
11.73	00	1.7277	3445	1497	0045	0016	0021	30.9405	163.32	1.4809	52.4	1480	1404.2	02.5
12.39	00	1.7962	3658	1570	0056	0008	0023	30.9383	163.50	1.4817	52.4	1481	1404.3	02.5
13.36	00	1.4370	4157	1836	0056	0114	0038	31.6466	165.41	1.4955	52.4	1482	1404.4	02.5
14.33	00	1.4089	4233	1792	0068	0007	0762	31.7937	165.74	1.4970	52.4	1483	1404.5	02.5
15.30	00	1.8005	2115	0714	0025	0029	0044	30.8757	163.35	1.4746	52.4	1484	1404.6	02.5
16.27	00	1.6991	1798	0334	0027	0043	0076	30.7053	162.97	1.4690	52.4	1485	1404.7	02.5
RUN N0.	37	CONF IG N0.	38											
5.32	00	1.8483	1703	0115	0143	0003	0062	31.3936	163.89	1.5061	14.6	0076	0	0000
9.44	00	1.1875	2337	0221	0142	0014	0040	31.1305	163.20	1.4998	14.6	0009	0	0000
10.52	00	1.4719	2862	0531	0138	0019	0015	31.2402	163.50	1.5023	14.6	0107	0	0000
11.58	00	1.5701	3034	0630	0147	0017	0058	31.1267	163.23	1.4989	14.6	0000	0	0000
12.60	00	1.6403	3204	0711	0148	0013	0023	31.0256	162.96	1.4964	14.6	0020	0	0000
13.54	00	1.6934	3853	1148	0048	0009	0006	31.3731	163.90	1.5042	14.6	0044	0	0000
14.51	00	1.3271	4117	1336	0652	0041	0560	31.7699	165.04	1.5111	14.6	0002	0	0000
15.48	00	1.8450	1925	0120	0133	0003	0040	30.9405	162.92	1.4902	14.6	0070	0	0000
16.45	00	1.5075	1651	0480	0139	0005	0006	31.0188	163.24	1.4884	14.6	0003	0	0000
RUN N0.	38	CONF IG N0.	39											
5.37	00	1.9282	2051	0116	0145	0029	0006	30.9443	163.28	1.4854	38.2	1402	1243.1	01.72
9.53	00	1.6411	2491	0170	0134	0025	0044	30.5457	162.24	1.4755	38.2	1403	1243.7	01.73
10.61	00	1.5992	3130	0277	0135	0033	0044	30.9702	163.26	1.4809	38.2	1404	1244.7	01.74
11.69	00	1.6724	3335	0366	0141	0026	0066	30.7137	162.70	1.4777	38.2	1405	1245.2	01.75
12.76	00	1.7362	3534	0634	0150	0022	0052	31.1245	163.82	1.4866	38.2	1406	1245.7	01.76
13.83	00	1.3854	4009	0634	0150	0103	0811	31.5537	165.09	1.4933	38.2	1407	1246.6	01.77
14.90	00	1.3762	4141	1275	0750	0087	0768	31.8126	165.79	1.4989	38.2	1408	1247.3	01.78
15.97	00	1.9333	2077	0111	0145	0029	0054	30.6333	162.69	1.4709	38.2	1409	1247.9	01.79
16.04	00	1.5770	1784	0428	0138	0021	0009	30.7292	162.99	1.4721	38.2	1410	1247.9	01.80

ALPHA	BETA	CLS	CDS	CMS	CRULLS	CYAS	CYS	Q	V	RT-TUN 10+6	PNZL	MASS FLGW	VJET	CMU
RUN NO.	85	CONFID NO. 37												
92	CC	9530	2119	0094	0131	0030	0049	30.9405	163.42	1.7801	52.5	.1864	1408.5	.0219
5.25	CC	1.2660	2622	0204	0133	0037	0055	30.7019	162.82	1.7737	52.5	.1864	1408.6	.0211
9.57	CC	1.6231	3219	0048	0143	0027	0031	30.5452	162.34	1.7713	52.5	.1854	1408.8	.0211
10.64	CC	1.6984	3408	0054	0137	0029	0111	30.7880	163.04	1.7600	52.5	.1859	1408.7	.0219
11.71	CC	1.7707	3604	0063	0147	0024	0070	30.7667	163.01	1.7477	52.5	.1894	1408.7	.0265
12.40	CC	1.4477	4132	0130	0611	0089	0726	31.4617	164.98	1.7882	52.5	.1890	1408.5	.0218
13.37	CC	1.4200	4217	0126	0719	0087	0721	31.5012	165.37	1.7901	52.5	.1874	1408.4	.0218
91	CC	1.5463	2097	0115	0132	0030	0072	30.7373	163.28	1.7711	52.5	.1863	1408.2	.0260
-3.42	CC	6025	1813	0434	0135	0029	0094	30.5997	162.82	1.7651	52.5	.1879	1408.2	.0264
RUN NO.	90	CONFID NO. 37												
93	CC	9670	2180	0093	0131	0030	0041	30.7428	163.03	1.7722	74.5	.2639	1551.8	.0406
5.26	CC	1.3095	2635	0187	0126	0031	0087	30.4873	162.41	1.7647	74.5	.2653	1551.6	.0412
9.57	CC	1.6257	3257	0096	0128	0018	0026	30.7471	163.25	1.7711	74.5	.2636	1551.3	.0404
10.64	CC	1.7193	3467	0054	0131	0018	0024	30.5452	162.62	1.7650	74.5	.2631	1551.2	.0407
11.72	CC	1.7264	3656	0028	0145	0012	0005	30.5384	162.65	1.7636	74.5	.2639	1550.9	.0408
12.75	CC	1.5087	4044	0039	0145	0066	0003	31.1551	164.39	1.7759	74.5	.2649	1550.2	.0412
13.64	CC	1.6983	4235	0135	0132	0082	0011	31.2216	164.65	1.7757	74.5	.2648	1549.8	.0411
93	CC	1.5407	2154	0105	0136	0039	0058	30.567	162.66	1.7566	74.5	.2663	1549.1	.0413
-3.40	CC	6183	1857	0426	0130	0024	0128	30.6260	163.18	1.7590	74.5	.2667	1548.8	.0411
RUN NO.	91	CONFID NO. 38												
92	CC	9821	1966	0115	0130	0009	0021	31.0668	163.70	1.7845	14.6	.0052	0	.0010
5.13	CC	1.1717	2344	0175	0135	0014	0022	30.9461	163.41	1.7809	14.6	.0121	0	.0010
9.44	CC	1.4914	2904	0076	0131	0031	0019	30.9677	163.51	1.7805	14.6	.0076	0	.0010
10.52	CC	1.5750	3091	0075	0136	0037	0077	31.1585	164.02	1.7848	14.6	.0013	0	.0010
11.58	CC	1.6402	3236	0075	0134	0031	0006	31.1226	163.56	1.7831	14.6	.0024	0	.0010
12.28	CC	1.3302	3867	0125	0136	0012	0048	32.1230	166.65	1.7850	14.6	.0119	0	.0010
13.28	CC	1.5271	3965	0109	0130	0013	0043	31.8345	166.11	1.7884	14.6	.0102	0	.0010
92	CC	1.8457	1967	0109	0137	0009	0006	31.3239	164.59	1.7856	14.6	.0100	0	.0010
-3.51	CC	5109	1690	0480	0133	0025	0022	31.3359	164.74	1.7841	14.6	.0144	0	.0010
RUN NO.	92	CONFID NO. 38												
93	CC	9232	2087	0101	0138	0015	0093	30.9438	163.59	1.7766	38.2	.1354	1243.5	.0166
5.22	CC	1.2655	2547	0184	0137	0033	0057	31.1721	164.22	1.7813	38.2	.1408	1243.9	.0171
9.52	CC	1.5775	3146	0061	0130	0045	0047	31.0142	163.82	1.7770	38.2	.1394	1244.4	.0170
10.61	CC	1.6638	3347	0034	0132	0045	0008	31.1790	164.27	1.7807	38.2	.1383	1244.4	.0168
11.66	CC	1.7245	3520	0085	0131	0044	0060	31.0470	164.02	1.7786	38.2	.1386	1244.6	.0169
12.53	CC	1.5816	4101	0131	0134	0161	0073	31.6082	165.52	1.7882	38.2	.1407	1245.2	.0169
13.44	CC	1.4944	4312	0099	0154	0194	0148	31.6058	166.37	1.7852	38.2	.1382	1246.0	.0165
93	CC	1.5252	2106	0099	0139	0016	0021	30.6920	163.47	1.7580	38.2	.1386	1246.2	.0172
-3.44	CC	5765	1802	0423	0137	0002	0021	31.0086	164.35	1.7647	38.2	.1381	1246.1	.0169

ALPHA	BETA	CLS	CDS	CMS	CRLLS	CYAWS	CYS	Q	V	RN-TUN 10.06	PN0ZL	PASS FLOW	VJET	CMU
RUN No. 92	93	CONFIG No. 38	CONFIG No. 38											
5.23	.01	.S06	.2151	.0105	.0331	..0023	.0106	31.0835	164.44	1.4632	52.4	.1872	1405.6	.02.8
9.55	.00	1.2782	.2592	..0170	.0313	..0034	.0067	30.9608	164.14	1.4653	52.4	.1304	1405.8	.02.4
10.63	.00	1.6088	.3244	..0444	.0307	..0031	.0076	31.0017	164.29	1.4654	52.4	.1867	1405.9	.02.8
11.70	.00	1.6916	.3434	..0520	.0310	..0037	.0004	30.8042	163.79	1.4652	52.4	.1849	1405.9	.02.7
12.36	.00	1.7579	.3618	..0580	.0316	..0038	.0005	31.1163	164.65	1.4668	52.4	.1850	1406.0	.02.5
13.29	.00	1.8087	.4164	..1293	.0464	..0015	..0860	31.7885	166.44	1.4821	52.4	.1849	1405.7	.02.9
14.11	.00	1.8419	.4411	..1478	.0682	..0016	..0747	32.2317	167.61	1.4921	52.4	.1859	1405.7	.02.7
15.12	.00	1.8715	.4715	..0109	.0331	..0021	.0102	30.6920	163.55	1.4562	52.4	.1868	1405.6	.02.1
16.09	.00	1.9009	.5009	..0434	.0339	..0003	.0119	31.0389	164.50	1.4636	52.4	.1855	1405.6	.02.6
RUN No. 93	94	CONFIG No. 39	CONFIG No. 39											
5.25	.00	1.8617	.2195	.0106	.0330	..0034	.0117	30.9150	164.02	1.4642	74.5	.2620	155.1	.04.1
9.56	.00	1.8922	.2649	..0175	.0309	..0038	.0104	30.7478	163.61	1.4595	74.5	.2639	155.3	.04.5
10.64	.00	1.9172	.3286	..0463	.0305	..0042	.0085	31.1278	164.63	1.4683	74.5	.2637	155.3	.04.1
11.64	.00	1.9391	.3787	..0534	.0305	..0041	.0034	30.9063	164.06	1.4627	74.5	.2637	155.3	.04.3
12.35	.00	1.9662	.4183	..0531	.0265	..0051	.0082	30.9472	164.10	1.4652	74.5	.2642	154.7	.04.3
13.41	.01	1.9962	.4583	..0531	.0410	..0029	.0034	30.7647	163.68	1.4596	74.5	.0000	154.4	.00.0
14.11	.01	2.0111	.4855	..0418	.0417	..0045	.0062	30.9302	164.12	1.4632	74.5	.0000	154.3	.00.0
RUN No. 94	95	CONFIG No. 40	CONFIG No. 40											
5.28	.00	1.9918	.2098	..0261	..0070	.0135	..1090	31.1381	161.22	1.5307	52.6	.1912	1407.1	.02.4
9.59	.00	1.9283	.2604	..0571	..0073	.0161	..1023	31.2914	161.69	1.5328	52.6	.1906	1410.4	.02.2
10.65	.00	1.9339	.3229	..0840	..0079	.0175	..1016	30.8655	162.64	1.5210	52.6	.1935	1411.6	.02.5
11.70	.00	1.9090	.3402	..0935	..0073	.0172	..1042	31.4209	162.12	1.5338	52.6	.1911	1412.3	.02.2
12.51	.00	1.9666	.3587	..0993	..0073	.0201	..1142	31.1517	161.48	1.5257	52.6	.1892	1412.9	.02.2
13.35	.00	1.9621	.4118	..1645	..0276	.0159	..1379	31.8501	163.37	1.5406	52.6	.1900	1413.1	.02.7
14.11	.00	1.9041	.4263	..1485	..0566	.0131	..1315	32.2147	164.51	1.5443	52.6	.1900	1412.8	.02.4
15.12	.00	1.9667	.4567	..0265	..0071	.0130	..1089	31.0421	161.71	1.5106	52.6	.1897	1411.8	.02.3
16.04	.00	1.9504	.4758	..0068	..0088	.0218	..1189	31.0916	161.93	1.5098	52.6	.1879	1411.7	.02.0
RUN No. 95	96	CONFIG No. 41	CONFIG No. 41											
5.28	.00	1.9167	.2046	..0945	..0204	.0301	..2036	30.7850	161.29	1.4985	52.6	.1897	1411.2	.02.5
9.59	.00	1.9336	.2632	..1257	..0199	.0312	..1996	30.9413	161.84	1.5023	52.6	.1891	1410.9	.02.3
10.65	.00	1.9088	.3131	..1511	..0188	.0318	..2073	30.9223	161.73	1.5001	52.6	.1887	1410.8	.02.3
11.70	.00	1.9088	.3303	..1591	..0174	.0317	..2138	30.7694	161.34	1.4960	52.6	.1887	1410.8	.02.4
12.57	.00	1.9295	.3685	..2114	..0019	.0235	..2072	31.3561	162.95	1.5084	52.6	.1893	1410.6	.02.0
13.50	.00	1.9240	.4093	..2187	..0110	.0239	..2091	31.7275	163.96	1.5161	52.6	.1881	1410.5	.02.5
14.11	.00	1.9539	.4470	..2109	..0127	.0150	..2003	31.7070	164.11	1.5108	52.6	.1880	1410.2	.02.5
15.12	.00	1.9218	.4700	..0956	..0209	.0208	..1983	30.6176	161.45	1.4802	52.6	.1865	1409.9	.02.2
16.04	.00	1.9936	.5036	..0616	..0210	.0204	..1998	30.5216	161.38	1.4778	52.6	.1898	1409.9	.02.7

ALPHA	BETA	CLS	CDS	CNS	CRLLS	CYAMS	CYS	Z	V	PN-TUN 10**6	PN0ZL	MASS FLBW	VJET	CMU
RUN NO.	104	CNF1G NO.	41											
83	.00	.899	.494	-.213:	-.0048	.0016	-.0051	41.0871	189.56	1.6599	14.8	.0089	.0	.0000
511	.00	.153	.185	-.180:	-.0049	-.0010	.0026	41.2689	190.07	1.6615	14.8	.0036	.0	.0000
939	.00	1.428	.211	-.149C	-.0060	-.0002	-.0010	41.1177	189.81	1.6565	14.8	.0102	.0	.0000
1046	.00	1.5175	.274	-.149C	-.0066	.0002	.0030	41.2232	190.12	1.6571	14.8	.0013	.0	.0000
1153	.00	1.5303	.234	-.1332	-.0063	.0005	.0013	41.3082	190.36	1.6579	14.8	.0032	.0	.0000
1258	.00	1.6398	.304	-.1332	-.0063	.0005	.0013	41.3082	190.36	1.6579	14.8	.0032	.0	.0000
1301	.00	1.368	.336	-.1599	-.0406	.0091	.0696	42.0545	192.27	1.6685	14.8	.0024	.0	.0000
1424	.00	1.282	.329	-.1639	-.0549	.0025	-.0406	42.3916	193.12	1.6733	14.8	.0036	.0	.0000
83	.00	.899	.494	-.213:	-.0048	.0016	-.0051	41.0871	189.56	1.6599	14.8	.0089	.0	.0000
RUN NO.	105	CNF1G NO.	41											
512	.00	1.452	.192	-.1815	-.0051	-.0004	.0003	30.6508	164.17	1.4227	14.8	.0032	.0	.0000
940	.00	1.472	.242	-.149C	-.0061	-.0003	.0039	30.9780	165.05	1.4299	14.8	.0039	.0	.0000
1047	.00	1.5195	.202	-.1415	-.0057	-.0004	.0024	30.8593	164.74	1.4272	14.8	.0000	.0	.0000
1153	.00	1.5390	.2768	-.135C	-.0056	.0008	.0003	30.7531	164.45	1.4248	14.8	.0063	.0	.0000
1246	.00	1.5451	.342	-.1417	-.0275	-.0033	.0479	31.3146	165.94	1.4379	14.8	.0048	.0	.0000
1340	.00	1.5452	.314	-.1470	-.0379	-.0118	.0382	31.3085	165.93	1.4375	14.8	.0000	.0	.0000
84	.00	1.472	.192	-.2146	-.0054	.0022	.0025	30.6051	164.34	1.4225	14.8	.0000	.0	.0000
348	.00	1.534	.150	-.12423	-.0030	.0016	-.0075	30.5990	164.09	1.4201	14.8	.0012	.0	.0000
RUN NO.	106	CNF1G NO.	42											
50	.00	.724	.166	-.1575	-.0041	-.0012	.0031	31.1926	159.78	1.5700	14.8	.0013	.0	.0000
936	.00	1.532	.182	-.1260	-.0050	-.0009	.0012	31.4617	160.56	1.5744	14.8	.0066	.0	.0000
932	.00	1.550	.2411	-.0970	-.0057	-.0009	.0009	31.3595	160.38	1.5698	14.8	.0013	.0	.0000
1025	.00	1.505	.2536	-.0890	-.0051	-.0005	.0061	31.5844	161.02	1.5738	14.8	.0105	.0	.0000
1125	.00	1.5355	.3662	-.0811	-.0054	-.0002	.0067	31.8467	161.76	1.5786	14.8	.0071	.0	.0000
1241	.00	1.5455	.3030	-.0812	-.0009	.0073	.0032	31.7581	161.57	1.5754	14.8	.0116	.0	.0000
1310	.00	1.578	.3565	-.1216	-.0342	-.0008	.0250	32.5758	163.75	1.5928	14.8	.0151	.0	.0000
348	.00	1.724	.164	-.1542	-.0046	-.0009	.0027	31.7018	161.61	1.5696	14.8	.0111	.0	.0000
360	.00	1.402	-.0100	-.1426	-.0027	-.0008	.0101	31.7853	161.97	1.5679	14.8	.0105	.0	.0000
RUN NO.	107	CNF1G NO.	42											
34	.00	.824	.039	-.1717	-.0058	.0007	-.0008	32.1291	163.03	1.5718	52.6	.1893	1399.5	.021
511	.00	1.477	.0734	-.1400	-.0068	-.0007	.0017	31.9693	162.70	1.5660	52.6	.1902	1402.2	.024
936	.00	1.477	.1373	-.1080	-.0073	.0001	.0004	32.0102	162.91	1.5645	52.6	.1901	1405.1	.024
1042	.00	1.477	.1498	-.0968	-.0074	.0006	.0012	32.1261	163.22	1.5669	52.6	.1894	1405.4	.024
1146	.00	1.5180	.144	-.0890	-.0071	.0012	.0010	32.4122	164.00	1.5725	52.6	.1923	1406.1	.024
1249	.00	1.536	.2160	-.0884	-.0043	.0047	.0055	32.5758	164.45	1.5756	52.6	.1920	1406.4	.024
1343	.00	1.433	.2590	-.1000	-.0021	-.0023	.0340	32.8380	165.19	1.5799	52.6	.1913	1406.8	.024
84	.00	1.812	.027	-.1705	-.0056	-.0010	.0016	32.2658	163.81	1.5635	52.6	.1908	1406.5	.024
343	.00	.805	.0273	-.1207	-.0041	.0000	-.0065	32.4735	164.45	1.5668	52.6	.1929	1406.2	.024

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13. ABSTRACT ⑬ A The wind tunnel study presented in this report was undertaken in order to evaluate the concept of blowing spanwise over the wing from the fuselage as a means of increasing lift coefficient of a T-2C aircraft. To optimize gains in lift coefficient, the parameters varied were nozzle position, nozzle angle, flap angle and blowing momentum coefficient. In addition, data were taken to evaluate the effect of spanwise blowing on aileron effectiveness, elevator effectiveness and lateral stability. Gains in lift coefficient over the entire angle of attack range below stall were noted. These gains were most substantial for the slotted flap at its largest deflection of 53 degrees at 43 degrees flap deflection with the flap slot closed. No substantial effect of spanwise blowing on the stability and control of the aircraft was observed. A LB			

